Excavating Engineer

founded 1905

AUGUST
1956

Miles of water and marshland provide the background for a 3-yd. excavator working in Louisiana's Delta country. The dragline is removing sand and clay from a flotation canal on a pipelining assignment. Please turn to page 22.

How a Reputation Was Earned for Low Upkeep and Big Output

ONE reason why Bucyrus-Erie excavators are so popular is their reputation for low maintenance. It's a reputation that's been earned with advantages like these —

Bucyrus-Erie's Individual Design for each model in its line matches every component to rated capacity — machines are never stretched to create a new model. There are few wearing parts, deadweight is reduced — you get maximum digging ability per pound of weight.

There's *quality-control* of every manufacturing detail. Each steel shipment undergoes mechanical, chemical, and metallurgical tests . . . is microphotographed for close analysis. With foundry facilities unsurpassed in the industry and an extensive, modern welding shop, Bucyrus-Erie pours its own castings and makes its own weldments. Thorough control is maintained over both manufacturing processes to insure the high quality that means top performance over years of profitable service.

These are some of the factors that contribute not only to minimum maintenance, but also to big output at low cost . . . and extra years of service. See your Bucyrus-Erie distributor soon for details on machines from ⅜- to 4-cu. yd.

203E56C

SOUTH MILWAUKEE BUCYRUS ERIE WISCONSIN

AT LEAST McNERNY'S SURE OF GETTIN' HIMSELF BACK HERE!! THOSE SUBSTITUTE PARTS LEFT HIM STRANDED AGAIN YESTERDAY!
NOK
NOK
NOK

Ever get fooled on "look-alikes"?

Take a part like your lube oil filter element. There may be substitutes that *look* like Caterpillar originals. But remember: CAT* elements filter every drop of oil before it reaches moving parts. They remove harmful particles, but they do *not* remove beneficial oil additives. And their special plastic-impregnated filtering material (accordion pleated to increase working surface) functions effectively through an entire oil change period. You're sure of longer engine life—less down time.

With substitute parts, can you be sure of anything?

Better see your Caterpillar Dealer's Parts Representative—and get Cat original parts every time.

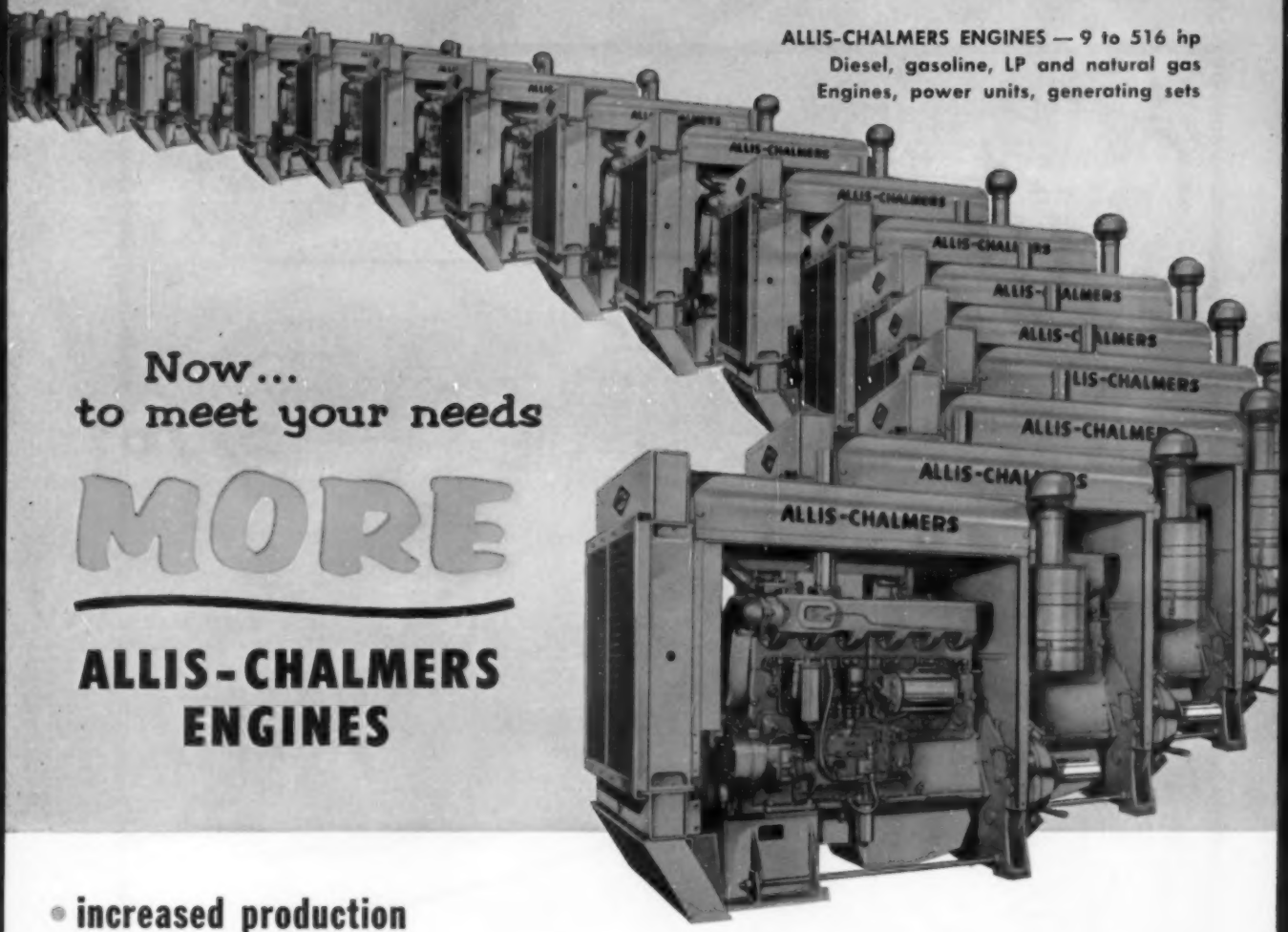
Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

Cat lube oil filter elements are specifically matched to the requirements of Caterpillar Engines. Don't buy trouble — buy factory-tested, job-proven Cat filters. They *really* protect your engine.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

ALLIS-CHALMERS ENGINES — 9 to 516 hp
Diesel, gasoline, LP and natural gas
Engines, power units, generating sets



Now... to meet your needs

MORE

ALLIS-CHALMERS ENGINES

- **increased production**
- **improved standards**
- **expanded service**
- **greater parts availability**
- **more parts interchangeability**

The production of Allis-Chalmers engines goes up, up, up to meet your needs. The 1956 production is expected to reach an all-time high — and 1955 output was many percent greater than 1954's. A multi-million-dollar expansion of facilities will further boost production.

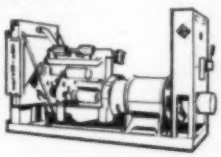
But there are not only *more* engines to meet your needs, there are *better* engines — as Allis-Chalmers research and development continues to pioneer improvements, and as production and inspection standards are set even higher.

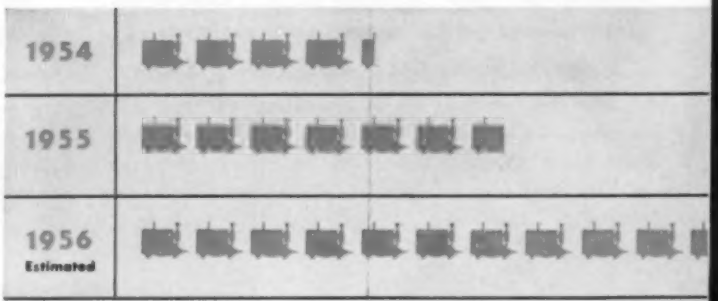
Along with this comes an expansion of customer service and greater parts availability, too, as sources of parts and service are moved closer to you.

More and more, it's Allis-Chalmers engines and service to meet your needs.

ALLIS-CHALMERS, BUDA DIVISION, MILWAUKEE 1, WISCONSIN

A complete line of improved engine generator sets from 5 to 300 kw, for emergency and continuous duty, for marine, cooling tower and industrial use.





The 1956 production of Allis-Chalmers engines will reach an all-time high, with output many percent higher than in previous years.

ALLIS-CHALMERS

8E-3

Advertisers
IN THIS ISSUE

Allis-Chalmers Mfg. Co. 2, 14–15
American Brake Shoe Co., American Manganese Steel Div. ... 12
American Hoist & Derrick Co., Crosby-Laughlin Div. 53
American Manganese Steel Div., American Brake Shoe Co. 12
Aveling Barford Ltd. 9
Bucyrus-Erie Co. ..... Cover II, 10–11, 54, 67
Buda Div., Allis-Chalmers Mfg. Co. ... 2
Caterpillar Tractor Co. ..... 1, 20–21, 57, Cover IV
Crosby-Laughlin Div., American Hoist & Derrick Co. ... 53
Detroit Diesel Engine Div., General Motors Corp. 50–51
Drake-Williams Mount 52
Eimco Corp., The 13
Electric Steel Foundry Co. 17–18
Erie Strayer Co. 59
Euclid Div., General Motors Corp. .. 6–7
Ford Motor Co., Ford Div. 19
For Sale (Classified) 73–74
General Motors Corp., Detroit Diesel Engine Div. 50–51
General Motors Corp., Euclid Div. .. 6–7
Hayward Co., The 61
Hendrix Mfg. Co. 49
Hough Co., The Frank G. 62–63
International Harvester Co. 38–39
Kiesler, Jos. F. Co. 65
Le-Tourneau-Westinghouse Co. 44–45, 47
Mack Trucks, Inc. 16
Manitowoc Engineering Corp. .. Cover III
Marion Power Shovel Co. 8
Northwest Engineering Co. 5
Owen Bucket Co., The 70
Rogers Bros. Corp. 60
Sauerman Bros., Inc. 69

Excavating Engineer
founded 1905

CONTENTS

Volume 50 No. 8 **August, 1956**

Delta Country's Floating Excavators 22
Men, machines are active in the near-wilderness area south and west of New Orleans preparing oil well locations and laying pipe. Here's the story of Monroe Wolfe's barge-mounted rigs.

Dam Will Fatten Their Cattle—by Albert S. Keshen 30
Venezuela builds a nine-mile long earth-fill structure across the Guarico River Basin for $50 million. Irrigation of 470 square miles will improve livestock and increase agricultural reserves.

Veterans Prosper on Tough Contracts—by Ray Day 36
Three skilled production veterans pool their talents to start new contracting firm; partners give personal supervision to two short but tough water and sewer jobs in Los Angeles.

News from the Field 46

Taconite Project Dedicated 46
Seaway Work Awarded 46
Richardson Joins Bay State 46
Skyscraper Schedules Met 46
Burnham Heads Good Roads Assn. 46
Engineering Firm Elects 46
Operation Deepfreeze 48
Tasmania Tunnel Dug 53
Hough Designer Honored 53

Equipment You Ought to Know About 55

Not in the Contract 56

New Trade Literature 71

Notes from the Manufacturers 72

COPYRIGHT 1956 BY THE EXCAVATING ENGINEER PUBLISHING COMPANY

Regular Subscription (payable in advance): 35 cents per copy, $3.50 a year; Canada and foreign, subject to publication policy, $5.00 per year. Special subscription: Upon written request on company letterhead this publication will be sent free of charge to companies, executives and supervisors engaged actively in excavating. Occupation of subscriber must be given for all subscriptions, paid or special. Right is reserved to refuse foreign subscription. Indexed by Engineering Index, Inc. Volumes available on microfilm.

Published Monthly by
THE EXCAVATING ENGINEER PUBLISHING COMPANY
South Milwaukee, Wisconsin, U.S.A.

W. E. WILLIAMS, Editor
M. B. JAEGER, Publisher
H. A. BURKHARDT, Manager
J. C. DeLONG, Associate Editor
E. W. ARNDT, Art Editor
W. C. VAN DYKE, Sales Manager

BPA Member

JOHN L. COLLYER — *Portrait by Fabian Bachrach*

"75% of B. F. Goodrich Employees... Save $9,000,000 Per Year"

"B. F. Goodrich people are proud of their many years of participation in the Payroll Savings Plan. 75% of our employees are members of the Plan, with payroll deductions of $9,000,000 a year.

"Thrift is one of the keys to our continued prosperity. It builds security for the family, retards inflation and stabilizes the purchasing power of the dollar. I am proud that Ohio is a leader in this worthwhile endeavor and that it has been my privilege to serve since 1950 as State Chairman of the Payroll Savings Advisory Committee."

JOHN L. COLLYER, ***Chairman***
The B. F. Goodrich Company

A simple person-to-person canvass that puts a Payroll Savings Application Blank in the hands of *every* employee is all you have to do to install the Payroll Savings Plan or build employee participation in your present plan. Your State Sales Director is ready to help you. Write today to Savings Bond Division, U. S. Treasury Department, Washington 25, D. C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

EXCAVATING ENGINEER

The NORTHWEST MODEL 41 · · 1 cu. yd.

Brings you the "production plus" that makes money!

Helical Gear Drive— There is no finer speed reducer. Helical cut gears, mounted on ball and roller bearings and running in an oil bath. Quiet—can't stretch, needs no adjustment.

"Feather-Touch" Clutch Control— Utilizes the power of the engine for throwing the heavy drum clutches. Gives ease of operation without resorting to delicate mechanisms.

Cushion Clutch—Eliminates the shock overloads before they reach the operating machinery—not after.

Uniform Pressure Swing Clutches—Take the jerks and grabs out of swinging and makes spotting loads easy.

Ball and Roller Bearings—Ball and Roller Bearings on all high-speed shafts have always been standard equipment on Northwest machines.

Choice of Boom Hoist —Northwest gives you a choice of Boom Hoist to meet any condition.

Cast Steel Bases—Northwest machinery bases are cast steel and provide a rigid, rugged foundation that stands up under rock work.

Steering—Northwest steering on the larger machines assures positive traction on both crawlers while turning as well as when going straight ahead.

There has been a lot of talk about shovel and Crane features in recent months and it is interesting to note that some of those advantages offered on other rigs have been standard on Northwests from the day the first Northwest was built. Hence they have reached a higher standard of perfection. Ball and Roller Bearings on all high-speed shafts, splined shafting, operating mechanism back of the center of rotation, have always been considered good shovel and crane design by Northwest engineers. These comprise just a small part of the many Northwest advantages that bring you the *production plus* that makes money. You should have *all* of them!

NORTHWEST ENGINEERING COMPANY
1506 Field Bldg., 135 South LaSalle Street,
Chicago 3, Illinois

PRODUCTION PLUS · MEANS MONEY ·

BUILD BETTER ROADS TODAY · FOR A GREATER AMERICA ·

See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

AMERICAN ROAD BUILDERS ASSOCIATION

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

For any Earthmoving Job . . .

Euclids

A complete line of off-the-highway equipment that gets more work done at lower cost

These "Eucs" have been the outstanding choice of contractors, mines, quarries and industrial users of heavy duty off-highway haulers for many years. Models with single drive axles have capacities of 10, 15 and 22 tons . . . engines of 128 to 300 h.p. . . 5 or 10 speed transmissions or Torqmatic Drive . . . standard or quarry body available for all 3 of these models.

Rear-Dumps with payload capacities of 10 to 50 tons

Utilizing the Twin-Power principle pioneered by Euclid, the 34-ton and 50-ton "Eucs" are designed for jobs where large tonnage must be moved. Two engines provide a total of 400, 436 and 600 h.p. . . . each engine drives one of the drive axles through a separate Torqmatic Drive . . . hydraulic power steering and exhaust heated bodies of 24 and 32 yd. struck capacity.

For over 25 years Euclids have delivered "plus" performance on hundreds of the toughest jobs. Simple, rugged construction, combined with advanced engineering that provides easy operation and maintenance, results in dependable work-ability. Wherever you see "Eucs" at work—on small jobs where one or two units maintain production or on big yardage projects requiring large fleets of equipment—you can be sure they are doing the job at lowest cost. Before you decide on any equipment for your present or future work, check the complete Euclid line. Your Euclid dealer will give you facts and figures on the models that meet your requirements and show you why *Euclids are your best investment.*

Loader and Bottom-Dumps— a high production team!

Bottom-Dump Euclids have struck capacities of 13, 17 and 25 cu. yds. and engines of 218 and 300 h.p. They provide fast non-stop dumping on fills, into drive-over hoppers or spreading in windrows through wide, full length hopper doors. . . top speeds loaded up to 30 mph. The low, wide hopper is easy to load by shovel, dragline, mobile loader and overhead hopper.

The "Euc" Loader, teamed with large capacity high speed Bottom-Dumps, can move up to 1200 bank yards per hour . . . makes shallow cuts up to 9′ 6″ wide, narrow cuts to 48″ deep. Belt width is 54″ . . . powered by 245 h.p. engine . . . all loader operations are hydraulically controlled by puller tractor operator.

EUCLID DIVISION, GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

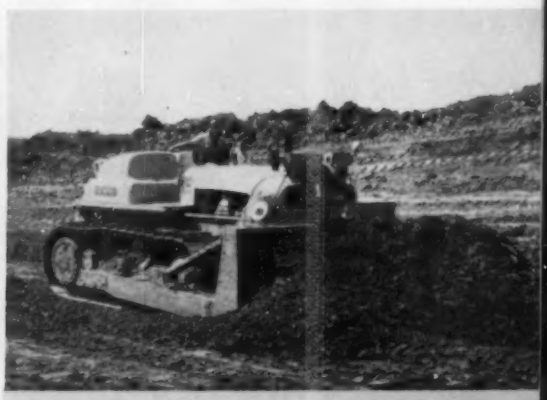
are your best investment

Overhung engine type Scrapers of 7, 12 and 18 yds. struck capacity

Powered by engines of 143, 218 and 300 h.p., these scrapers are the fastest selling line in the industry. Advanced design of Euclid's hydraulic lever action, bowl and cutting blade provides fast, easy loading. The 18 yd. model has Torqmatic Drive . . . all have NoSpin differential and Euclid planetary drive axle . . . unequalled accessibility of power train and major components.

Four-wheel Tractor Scrapers

These 12 and 15.5 yd. scrapers have maximum stability for high speed hauls and rough roads. At 3:1 slope heaped capacity is 14 and 18 yds. A 200 or 218 h.p. engine with 5-speed transmission powers the 12 yd. scraper . . . drive tires are 21.00 x 25 standard with 24.00 x 25 optional. The 15.5 yd. scraper has 300 h.p. engine with 10-speed transmission or Torqmatic Drive . . . standard tires are 24.00 x 25 with 29.5 x 25 optional . . . a 17 yd. bottom-dump trailer is interchangeable with this scraper.



TC-12 Twin Crawler

A completely new concept in tractor design and performance, this Euclid tractor has two 194 h.p. engines (388 h.p. total) with a separate Torqmatic Drive for each track. Changing from one speed range to another (top speed of 8.3 mph) or to one of the three reverse speeds can be done under full power. Available drawbar pull is equal to or greater than gross weight. Planetary drives can be serviced without removing track, frame or drive sprocket.

Twin-Power "Euc" Scraper

The Model TS-18 is powered by two engines with a total of 436 or 518 h.p. It is a one-man earthmoving crew. . . self-loads and works under conditions that stop other scrapers. Tractor has a 218 h.p. or 300 h.p. engine with Torqmatic Drive . . . scraper wheels are driven through Torqmatic Drive by a 218 h.p. engine. Tires are 27.00 x 33 with 33.5 x 33 optional. Heaped capacity at 3:1 is 21 yds.

Rear-Dumps, Bottom-Dumps, Scrapers, Loaders, Tractors

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID

NEW! **from cats to boom sheaves**

¾ Yard Shovel - 18 Ton Crane - Air Control
Easy to convert - Self-Cleaning Crawlers
Independent Boomhoist - Also available as
35-MR Truck Crane

Optional equipment: torque converter, independent travel

MARION

See your Marion Distributor for Details!

POWER SHOVEL COMPANY

Marion, Ohio

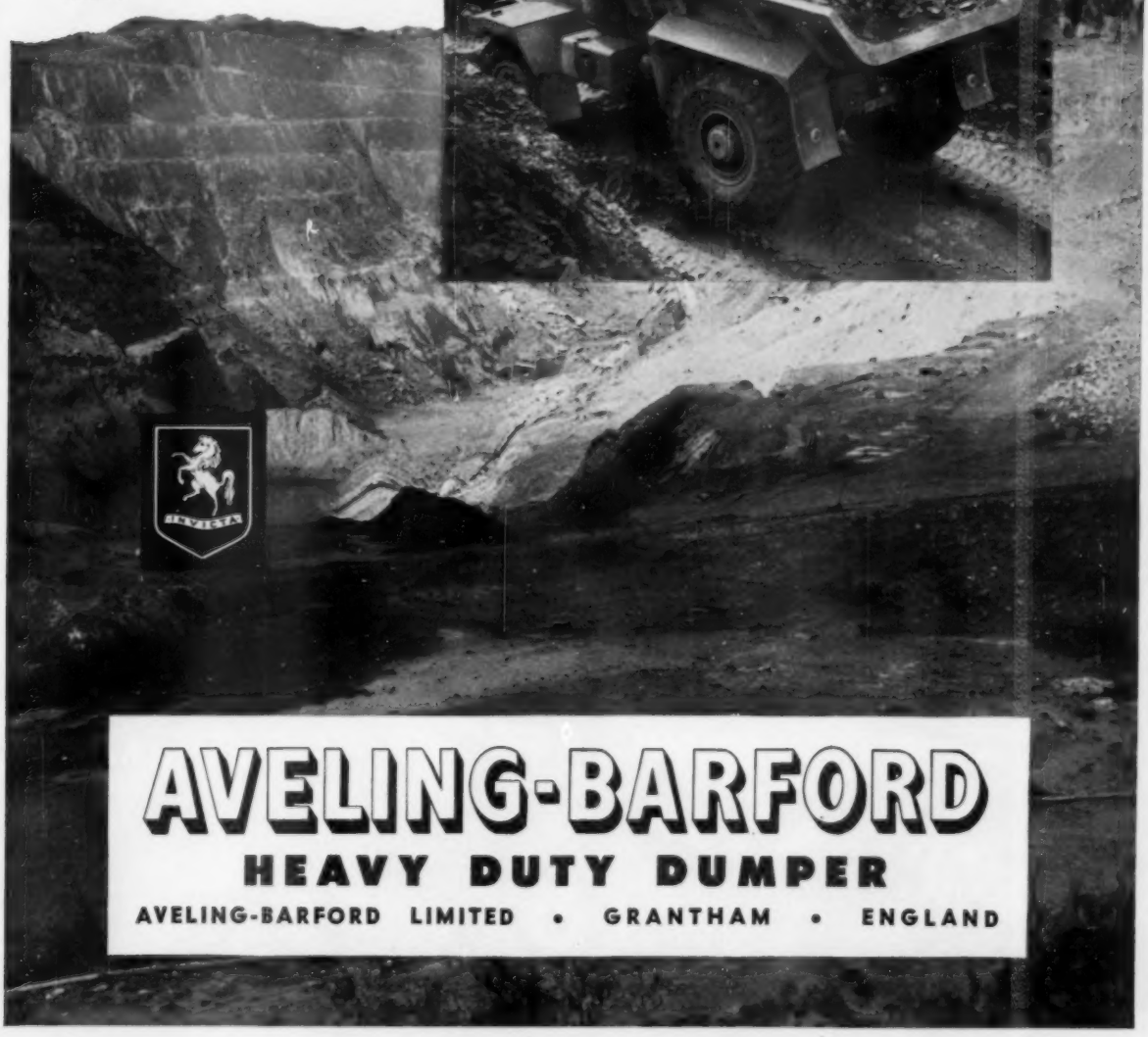
¡ EXCELENTISSIMO!

At the Tharsis Copper and Sulphur Mine in Spain a fleet of Aveling-Barford 7½ cubic yard Dumpers each hauling a 20,000 lb. payload are cutting cycle times on every run.

With their 150 B.H.P. diesel engine, four forward and four reverse speeds, two-way steering and quick-acting hydraulic tipping, they have proved their ability to cut costs both in operation and maintenance.

For full particulars write for Pub. No. 1724/10.

Photographs by courtesy of the Tharsis Copper and Sulphur Co. Ltd.



AVELING-BARFORD

HEAVY DUTY DUMPER

AVELING-BARFORD LIMITED • GRANTHAM • ENGLAND

clamshell

. . . to
crane . . .

. . . to hoe.

QUICK CHANGE

from clam to crane to hoe

makes HYDROCRANE the one machine just right for Water, Sewer work

When your work calls for digging, lifting, and trenching all in the same day, you need a machine that converts from clamshell to crane to hoe quickly and easily. That machine is the Hydrocrane. Owners report they can switch their Hydrocrane to Hydrohoe in less than one man-hour. Changing from crane to clamshell or vice versa is done in less than two minutes.

Stop using the wrong front end just because changing front ends is a tough, time-consuming, uneconomical operation. Get a Hydrocrane! Take advantage of this versatile machine's precision control, the long reach of its telescoping crane boom in placing valves or pipe . . . in loading or unloading materials. Then, when needed, switch quickly to the hydraulic clamshell bucket (easily carried with machine wherever it goes) to dig valve pits, manholes or catch basins.

When it comes to trenching, you'll find the fast and easy changeover to hoe gets you on the job sooner. And, once at work, the Hydrohoe's exclusive triple digging action — normal hoe arc, telescoping boom and wrist action at the dipper — keeps output high, reduces hand trimming.

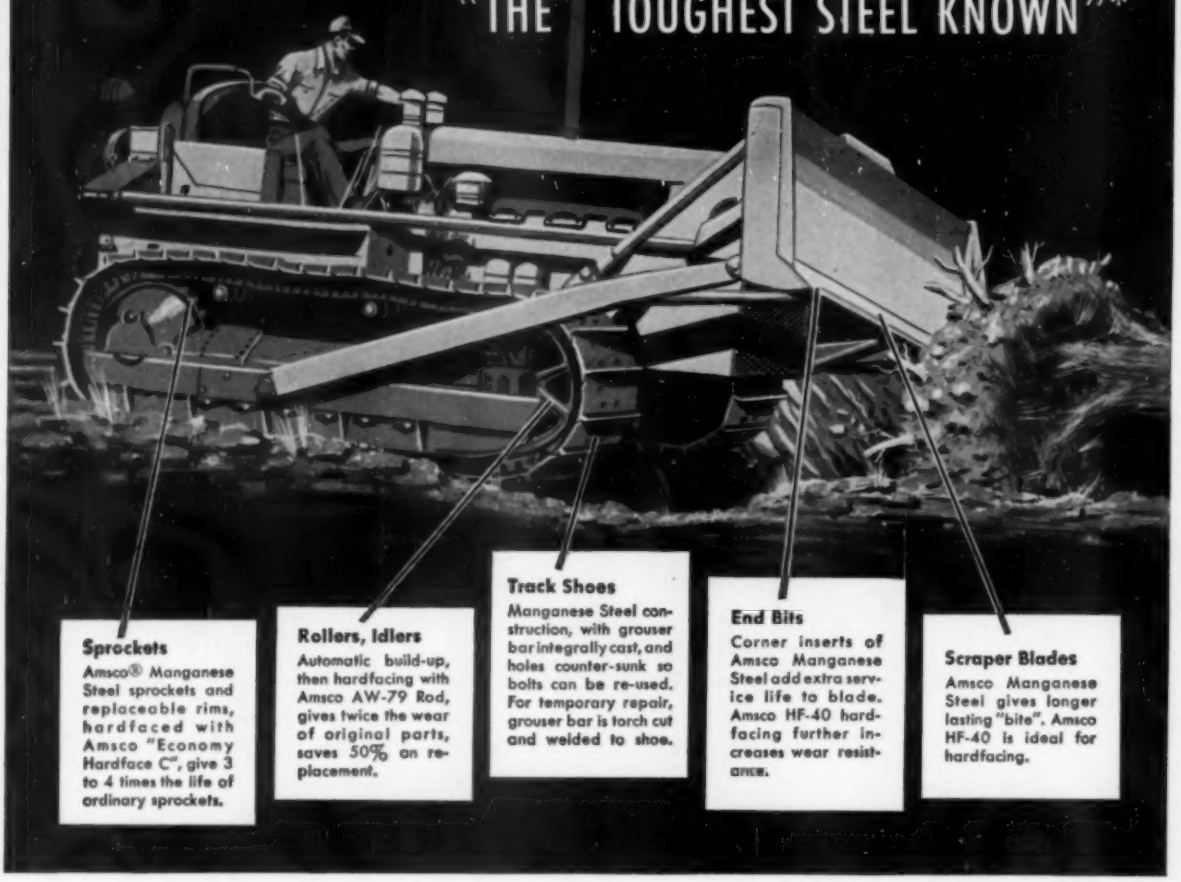
Have your Bucyrus-Erie distributor demonstrate the capabilities of this fine machine. 126H56C

BUCYRUS-ERIE COMPANY

SOUTH MILWAUKEE, WISCONSIN

BUCYRUS ERIE HYDROCRANE

At these TOUGH WEAR points, specify "THE TOUGHEST STEEL KNOWN"*



Sprockets
Amsco® Manganese Steel sprockets and replaceable rims, hardfaced with Amsco "Economy Hardface C", give 3 to 4 times the life of ordinary sprockets.

Rollers, Idlers
Automatic build-up, then hardfacing with Amsco AW-79 Rod, gives twice the wear of original parts, saves 50% on replacement.

Track Shoes
Manganese Steel construction, with grouser bar integrally cast, and holes counter-sunk so bolts can be re-used. For temporary repair, grouser bar is torch cut and welded to shoe.

End Bits
Corner inserts of Amsco Manganese Steel add extra service life to blade. Amsco HF-40 hardfacing further increases wear resistance.

Scraper Blades
Amsco Manganese Steel gives longer lasting "bite". Amsco HF-40 is ideal for hardfacing.

*AMSCO MANGANESE STEEL . . . plus AMSCO HARDFACING

Shown above are just a few of the "tough wear" points where Amsco products can save you money. Whether for original parts, or for build-up and hardfacing, specify Amsco Manganese Steel and Amsco Hardfacing for maximum operating economy.

We'll be glad to give you full information on Amsco Tractor Parts, Hardfacing Materials or Automatic Welding Machines. Just call your nearby Amsco representative, or write us direct.

OTHER AMSCO PRODUCTS

DIGGING: backhoe buckets—dippers and parts—repointers—dragline bucket parts—dragline chain—sheaves—pinions.

CRUSHING: concaves—mantles—jaw plates—mill liners—hammers.

HANDLING: truck bed liners—grizzly parts—car wheels and liners—sheaves, gears, pinions.

WELDING: automatic and semi-automatic welders—hardfacing rod—manganese plates and shapes.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE, DEL., OAKLAND, CAL., ST. LOUIS; JOLIETTE, QUEBEC

QUEBEC HYDRO-ELECTRIC COMMISSION USES EIMCO 105 TRACTOR-EXCAVATORS ON BERSIMIS PROJECT

The Quebec Hydro-Electric Commission supplied contractors on the huge Bersimis project with several Eimco 105 Tractor-Excavators as the most efficient machines available for certain phases of the job.

Eimco 105's worked on the penstocks at the powerhouse, loaded blasted rock at the diversion tunnel, mucked in the intake shafts, assisted in clean up of the main tunnel, loaded aggregate from the quarries and accomplished numerous other jobs including, (as shown above) the takeup of the bottom in the main tunnel.

The main tunnel bore at Bersimis is 7 miles long and excavated diameter was 45 feet. The intake shaft on the Diversion tunnel was 32 feet in diameter by 120 feet deep. The Bersimis project is scheduled to generate power by July or August of 1956.

Contractors have worked steadily in the face of adverse weather conditions to complete this great work at an early date. Eimco extends its heartiest congratulations on a job well done.

Eimco 105 Tractor-Excavators are at work throughout the world on Hydro-electric development projects, mines, roadbuilding, stockpile loading, pits and quarries and many other rough jobs. In many instances, the 105 is the only production equipment on the job—because its dependability is a well known and proven fact.

If your project calls for a tractor, bulldozer, or excavator, you'll want Eimco to supply you with full information about the versatile 105. Just send details of your project. You'll find, as have many others, that Eimcos will do the job faster, cheaper and better.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

EIMCO

B-318

LOOK TO THE ALLIS-CHALMERS LINE . . . TO

Match the needs of your tractor

If you're looking for big capacity, mobility and wide-range versatility — at low cost — the tractor shovel you need is in the Allis-Chalmers line.

First — advanced-design features make Allis-Chalmers tractor shovels the most productive and widely accepted in earth-moving and material handling fields. Second — each unit offers a shovel that's a built-in part of the tractor — not just an attachment. Third — you have a choice of four sizes to match the needs of your jobs most efficiently.

You can increase Allis-Chalmers tractor shovel usefulness even more by replacing the standard bucket with a variety of quick-change attachments, such as a light materials bucket, rock bucket or rock fork . . . or by adding a rear-mounted ripper.

On every job, your Allis-Chalmers tractor shovel provides all these important advantages for you and your operator:

- Superior balance and low center of gravity
- Sure-footed stability with extra long track
- Greater strength with heavy, welded-steel shovel, side frames and low stabilizer
- Bucket design that makes loading and dumping fast, clean and easy
- Simplified hydraulics with 3-way, full-flow filtering
- Powerful, long-life Allis-Chalmers diesel engine
- All-steel main frame and one-piece final drive and steering clutch housing
- Timesaving service simplicity
- Heavy-duty roller bearing truck wheels
- 1,000-hour lube intervals on truck wheels, idlers and support rollers
- Better visibility, comfortable seats, and easy operating, accessible controls

4 YD

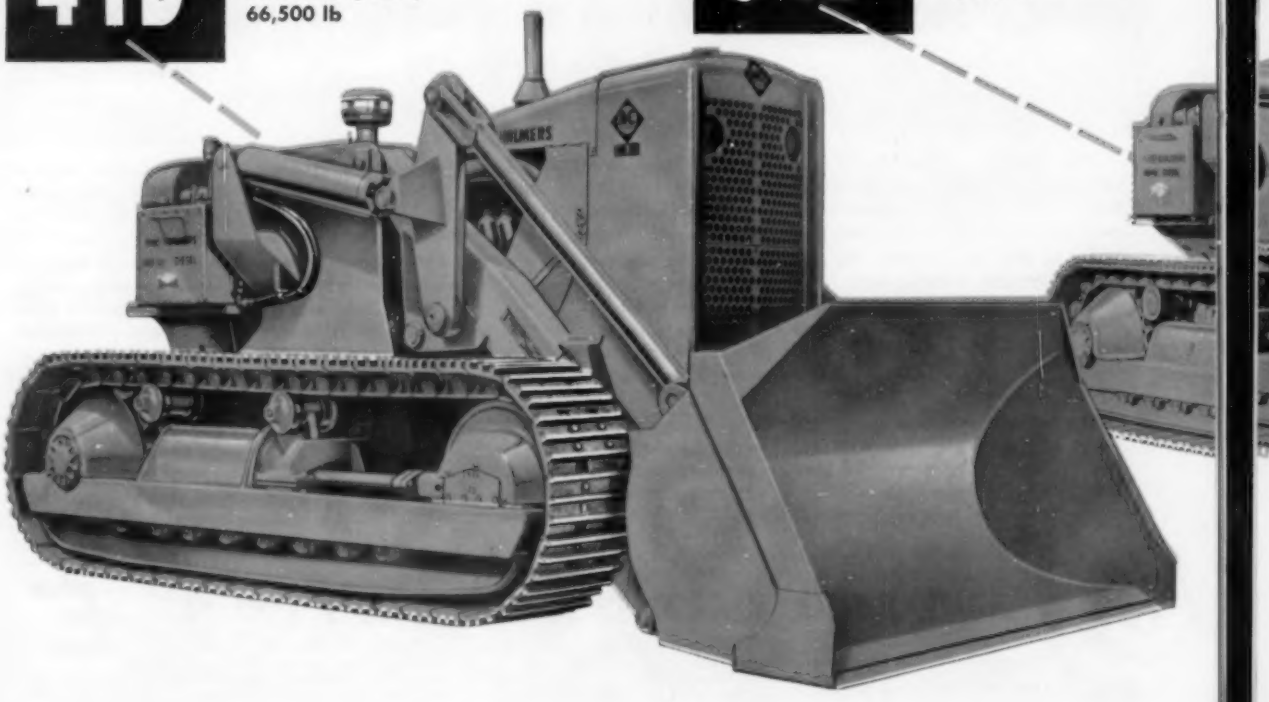
HD-21G

torque converter drive
13-ft, 4-in. dump height
204 net engine hp
66,500 lb

3 YD

HD-16G

torque converter drive
12-ft, 3-in. dump height
150 net engine hp
47,800 lb



shovel jobs

1½YD

HD-6G

10-ft dump height
57 net engine hp
19,600 lb

2¼YD

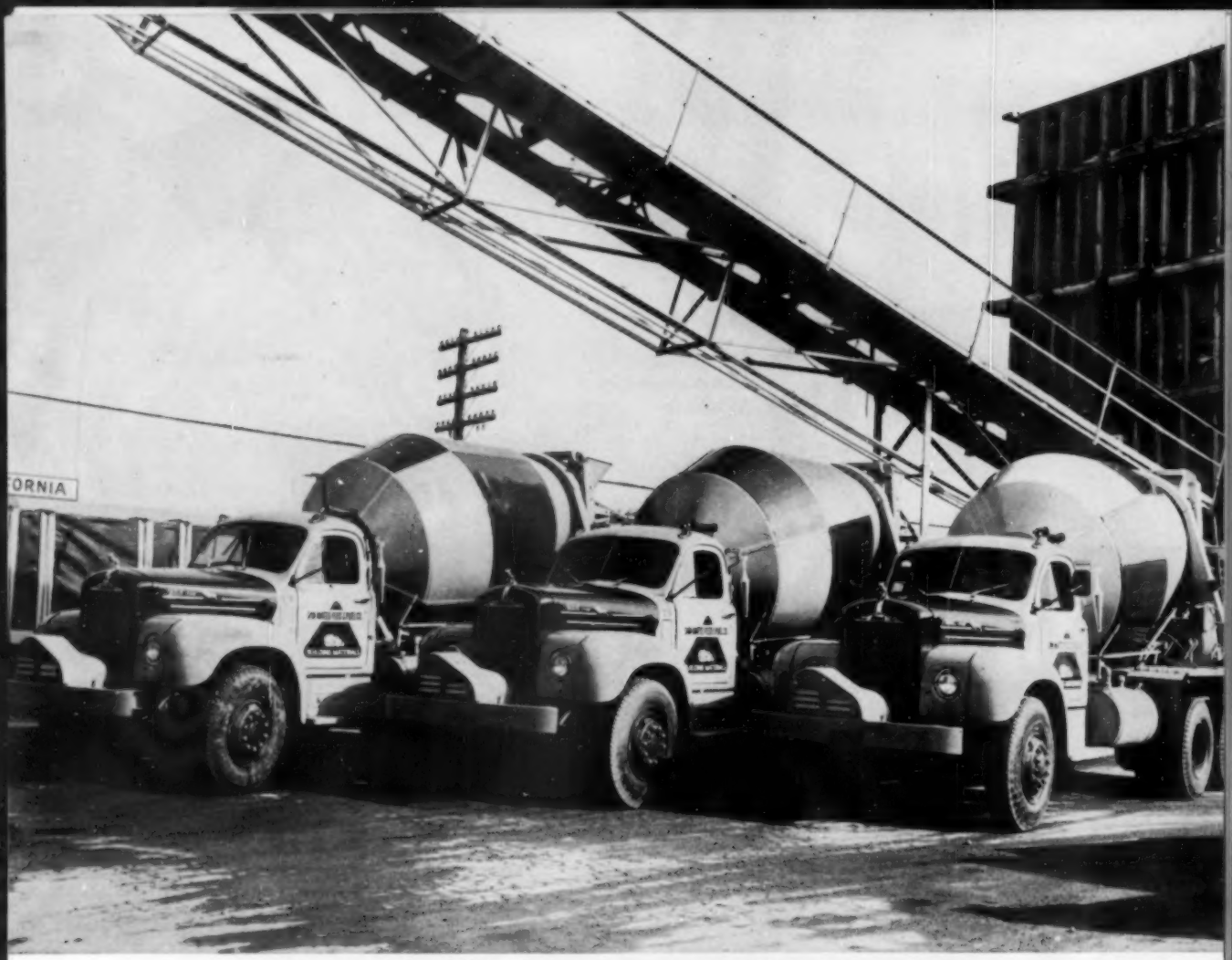
HD-11G

11-ft, 7-in. dump height
105 net engine hp
32,000 lb

Ask your Allis-Chalmers Construction Machinery dealer for the complete story and for a look at one of these great tractor shovels at work. And remember, your dealer is headquarters for factory-trained servicemen, factory-approved facilities and complete stocks of True Original Parts.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION
MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS



These three Mack model B421S concrete mixers are part of the big San Mateo Feed & Fuel Company's fleet. Macks have helped set the pace for their growing operation since 1951.

compared to all other makes in our fleet . . . MACK's performance and maintenance records were outstanding . . . that's why we bought 35 more

—R. C. Hughes, President
San Mateo Feed & Fuel Company
San Mateo, California

Proof of performance is what Mr. R. C. Hughes, president of San Mateo Feed & Fuel Company, demanded before buying 35 new Macks—21 model B421S mixers, and 14 model B30P dumpers.

"We relied on our records," commented Mr. Hughes, "when the time came to make a major decision for modernizing our fleet. The answer was clear . . . in our mixed fleet Macks were the stand-outs for fuel economy, low maintenance cost, and over-all earning capacity.

"We bought our first six Macks in 1951, and added 14 more in 1952. Now, with the addition of 35 new units, our fleet contains 55 Macks. We consider our big investment in Macks an important factor in building increased profit into our rapidly growing business."

Get the facts on Macks before you buy another truck. See your Mack Branch or Distributor and find out how Mack can give you top performance and economy in every trucking operation.

4014

MACK TRUCKS, INC., Plainfield, New Jersey. IN CANADA: Mack Trucks of Canada, Ltd.

"We get more Dig Per Dollar

GEORGE TEER
Master Mechanic

...because an ESCO Bucket Specialist job-tailored our shovel dipper,"

say the managers of Nello L. Teer Company

DILLARD TEER
Vice-President

"Specifically tailored to *our* digging conditions, *ESCO* Buckets have profitably increased our production," agree George Teer, Master Mechanic and Dillard Teer, Vice-President, Nello L. Teer Company, Durham, North Carolina.

The Nello Teer contracting firm operates five Marion 111-M machines, all equipped with *ESCO* 4-yard shovel dippers, each specially designed for the kind of digging encountered in their operations. The firm also uses *ESCO* 2½-yard shovel dippers on seven of their ten Northwest 80-D machines, and 1-yard *ESCO* shovel dipper on their Lima 34.

Put a job-tailored *ESCO* bucket on your machine—and watch production climb! *ESCO* builds a complete line of dragline buckets, dippers, backhoes and orange-peels.

Manufacturing Plants
2143 N. W. 25th Ave., Portland 10, Ore.
1017 Griggs Street, Danville, Illinois

ESCO International New York Office
at 420 Lexington Ave., New York City, or Portland Manufacturing Plant

Other Offices and Warehouses:
Los Angeles,
San Francisco, California
Seattle, Spokane, Washington
Houston, Texas
Eugene, Oregon
Salt Lake City, Utah
Denver, Colorado
Honolulu, Hawaii

In Canada, ESCO Limited Manufacturing Plants
Vancouver, B. C., and
Toronto, Ontario

For details, see your ESCO Dealer today, or write direct.

ESCO

ELECTRIC STEEL FOUNDRY COMPANY

INCREASE YARDAGE

DIG FASTER...DUMP CLEANER...LAST LONGER

Any way you look at it – from any angle – it's the taper that makes *ESCO* dragline buckets dig faster, dump cleaner, and last longer.

DIG FASTER. Bucket sides flare outward from the lip to increase loading speed. Materials are not compressed into the opening but allowed to expand and flow up and back along the tapered sides filling the bucket completely without voids in the rear. Bucket fills in shorter drag distance – less line pull required.

DUMP CLEANER. Taper from front to rear and outward flare from lip to arch allows load to drop quickly and easily from the bucket. Load dumps clear of high tubular arch.

LAST LONGER. Tapered design reduces loading and dumping friction to an absolute minimum. Bucket lasts longer. All welded construction and the maximum use of alloy steel castings makes a high strength-to-weight ratio resulting in "lower cost per yard operation".

PATENTS PENDING

WITH *ESCO* TAPERED DRAGLINE BUCKETS

ESCO Tapered Dragline Buckets have been proved by thousands of hours of operation all over the world.

Bring your bucket problems to *ESCO*, your bucket specialists. *ESCO* will "job-tailor" a bucket to your operation. Ask your nearest *ESCO* dealer for complete details today, or write direct.

Manufacturing Plants
2143 N. W. 25th Ave., Portland 10, Ore.
1017 Griggs Street, Danville, Illinois

***ESCO* International New York Office**
at 420 Lexington Ave., New York City, or
Portland Manufacturing Plant

Other Offices and Warehouses:
Los Angeles,
San Francisco, California
Seattle, Spokane, Washington
Houston, Texas
Eugene, Oregon
Salt Lake City, Utah
Denver, Colorado
Honolulu, Hawaii

In Canada, *ESCO* Limited Manufacturing Plants
Vancouver, B. C., and
Toronto, Ontario

ESCO

ELECTRIC STEEL FOUNDRY CO.

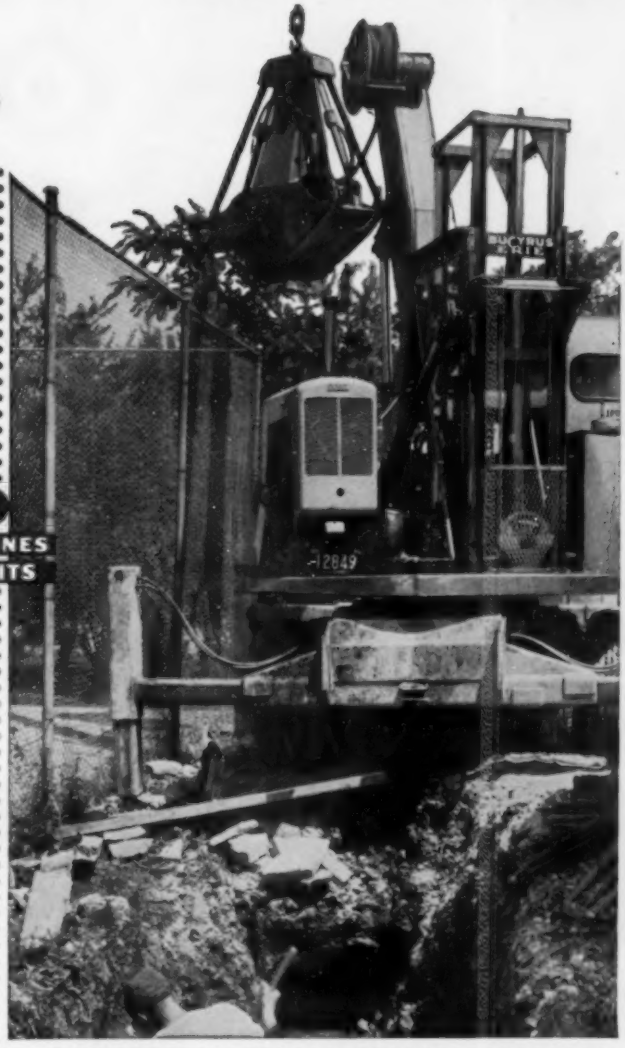
"FORD POWER STARTS QUICKLY

hangs on to heavy loads — doesn't hesitate a bit!"

says FREDERICK VOLK, Fox Point, Wis.

"We handled approximately 60 cubic yards in close quarters with the clam shell in about three hours work. We were digging a drainage trench for a 42" culvert and had to go around various obstacles including trees and a 12-ft. fence to swing the clam over with the load. I like the Ford power of this Hydrocrane because it starts quickly—hangs on to heavy loads and it doesn't hesitate a bit!"

Ford
INDUSTRIAL ENGINES
AND POWER UNITS

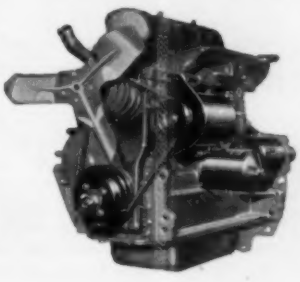


The Bucyrus-Erie Model H 3 Hydrocrane that Mr. Volk operates for the village of Fox Point is powered by a Ford "172" industrial engine. Built for versatility, mobility and economy, the Hydrocrane gives precision control through a hydraulically operated closing bucket and a variety of attachments. Upper deck revolves 360° with telescoping high-lift boom capable of from 30- to 38-ft. full load length. Hoist rams provide free line speed of up to 190 f.p.m. with 6,000 lbs. line pull. Ford Industrial Engines can provide similar power plants for all the major types of construction equipment.

It will pay you to specify Ford engines on your next piece of equipment because Ford is the only industrial engine manufacturer to offer modern Short Stroke design in a *full line* of overhead-valve 4-, 6- and 8-cylinder engines. These engines cut piston travel and piston speed which reduce friction and wear. The result is more usable power and extended engine life. This means you get jobs done quicker and more economically.

Right down the line . . . from the 134- and 172-cu. in. 4-cylinder engines . . . to the powerful 6-cylinder 223-cu. in. engine . . . and the big heavy-duty V-8's of 272 and 332 cu. in. displacement, you'll find Ford engines are years ahead in engineering. Engines that are designed to give power-packed performance more economically and for a longer period of time.

FORD "172"



Autothermic pistons help maintain proper piston-to-wall clearance and prolong engine life.

Large overhead valves of high chrome-nickel alloy improve volumetric efficiency, resist warping.

Free-turn intake and exhaust valves reduce the possibility of valves sticking, help maintain compression longer.

Iron Alloy sleeves are centrifugally cast for better heat transfer and wear characteristics plus longer cylinder wall life.

For detailed information, phone or write today to:

INDUSTRIAL ENGINE DEPT., **FORD Division of FORD MOTOR COMPANY,** P.O. BOX 598, DEARBORN, MICH.

RESULTS OF FLORIDA TURNPIKE JOB TEST

JOB AND LOCATION: Building 3.8 miles of new road on Florida Turnpike, near Hollywood. The job involves moving about 1,000,000 cu. yd. of sand. The contractor: Troup Bros., Inc., Miami. CONDITIONS: *Material*—very fine, loose white sand with an estimated shrinkage of 25%, borrow to compacted. *Loading*—D9 (Series D) Tractor with torque converter used for pusher. *Haul distance*—3250 feet over loose to damp, compacted sand, maintained by a No. 12 Motor Grader. Rolling resistance, 100 lb./ton. *Return distance*—3650 feet. *Grades on haul*—400 feet of 1°-3° adverse and 600 feet of 1°-2.2° adverse.

TIME STUDIES

AVERAGE	DW21-No. 470 LOWBOWL Scraper
Load time	.44 min.
Haul time	3.33 min.
Haul speed	11.14 MPH
Spread and turn time (180°)	.38 min.
Return time	3.37 min.
Return speed	12.31 MPH
Wait time	.39 min.
Total cycle time	7.91 min.
Trips per hour	7.59
Pay yd./trip	16.8
Production pay yd./hr.	128

REMARKS: The loose, fine sand was difficult material to load. In spite of this, average loading time was excellent, due to the fast-loading characteristics of the new No. 470 LOWBOWL Scraper. Average cycle time was excellent, too—a reflection of the new DW21's Turbocharged power and wide-base tires!

The new two-wheel Cat DW21-No. 470 LOWBOWL Scraper

A new four-wheel DW20-No. 456 LOWBOWL Scraper is also available. Both units have a capacity of 25 cu. yd. heaped and 18 cu. yd. struck. Both feature the new Turbocharged, 6-cylinder Caterpillar Engine which delivers 300 HP (maximum output) and 10% more rimpull. New LOWBOWL design loads more material with less resistance clear to the end of the loading cycle. And wide-base tubeless tires, now standard equipment, eliminate the major portion of down time caused by tires. All these and other new features add up to bigger, faster loads for you with Cat LOWBOWL Scrapers!

More proof that CAT*

LOWBOWL

Scrapers deliver bigger, faster loads

Handling tough material on the Florida Turnpike, a new DW21 (Series C) Tractor-No. 470 LOWBOWL Scraper averaged 128 pay yd. an hour on a 6900-foot round trip

Recent tests on the Florida Turnpike confirm previous reports from other jobs in Iowa, Kansas and New Jersey—the new Caterpillar LOWBOWL Scraper steps up production with bigger, faster loads. Here's proof again that on the job, where results and only results pay off, the new LOWBOWL design delivers a new high in money-making performance.

Says Donald R. Grubbs, Superintendent for Troup Bros., Inc., Miami: "I like the wide-base tires on this new DW21—they help us over this sandy fill. The new LOWBOWL Scraper design also cuts down our loading time. What's more, we've had very little down time with our Caterpillar equipment."

Before you make your next bid, get the full facts about the new LOWBOWL Scrapers. Your Caterpillar Dealer's salesman carries completely documented details about their productive capacity on this and other jobs. Ask him to show them to you!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

BIGGER, FASTER LOADS WITH CAT LOWBOWL SCRAPERS

Excavating Engineer
founded 1905 AUGUST, 1956

Swinging a 4-yd. dragline bucket, Monroe Wolfe's 88-B on barge No. 3 sweeps a wide trench ahead of Houston's pipelayers.

Delta Country's Floating Excavators

EXCAVATORS working from spud barges figure prominently these days in fast-moving earth-moving adventures in a near-wilderness area of Louisiana.

The area is the marshlands of the Mississippi Delta that stretch for many miles south and west of New Orleans. To the casual observer, these lands may appear worthless. They are valuable, however, because of deposits of oil and natural gas.

Men interested in the two commodities provide considerable company for the birds, snakes and alligators who inhabit the green expanse of the mushy Delta land. Excavators have dug and are digging hundreds of miles of flotation canals through which barge-mounted oil well drilling equipment is directed to locations where confident oil men hope a producing well can be sunk. The drilling locations also are prepared by the excavators.

Dig Trenches

Other excavators and heavy equipment are involved in natural gas pipelining operations. Flotation canals are dug. Later, pipeline trenches are excavated in the flotation canals, shortly before the pipe is dropped into the trench from pipelaying barges.

Two of the firms which specialize in marshland excavation are the Monroe J. Wolfe Co. and its subsidiary, the Circle Dredging Co., both of New Orleans. Monroe J. Wolfe has been in the business since 1942.

When *Excavating Engineer* visited

Men, machines are active in the near-wilderness area south and west of New Orleans preparing oil well locations and laying pipe. Here's the story of Monroe Wolfe's barge-mounted rigs.

the New Orleans area in early April, Wolfe's machines were active in digging flotation canals and trenches for pipelining and in preparing oil well locations.

Wolfe was concentrating much of his equipment on a pipelining operation under subcontract to the Houston Contracting Co., Houston, Tex. Houston held the prime contract for installing about 150 miles of main line and lateral pipe for the Tennessee Gas Transmission Co.

The pipeline will transmit natural gas into the Tennessee Company's system at Bayou Sale, south of Jeanerette, La., for transmission to the Northeast. Jeanerette is about 135 miles west of New Orleans.

The 24-in. main line pipe which Houston was to install extends from Bayou Sale to a point opposite Cocodrie, La., approximately 65 miles southwest of New Orleans.

The contract included the following five laterals of 12, 8, 6 or 4-in. pipe: Amelia lateral, 18 miles; Halter Island lateral, 10 miles; Bay Marchand lateral to Bay Marchand field, 10 miles; LaRose Field lateral, 12 miles; and Delta field lateral, 21 miles.

Houston Contracting Co. held the prime contract for installing about 170 miles of main line and laterals. The main line extends from near Jeanerette to Cocodrie.

Big Excavation Job

Wolfe's contract was for the excavation of about 10 million cubic yards of material. Houston did its own pipelaying under a contract which was begun last January 25 and was scheduled to have been completed July 1.

Wolfe dug 40-ft. flotation canals to minus 7 feet mean sea level. The land is about 1½ feet above mean sea level. The trench for the pipeline was excavated to minus 13 feet. Trench depths at about 15 major stream crossings, however, ranged from 10 to 75 feet. Some of the excavation for the crossings was handled by hydraulic dredges.

Clamshells generally were used for the canal excavation, with draglines digging the trenches and, in places, canals. Excavated material was deposited on both sides of the canal. The trenches were to be backfilled by boom-type equipment, possibly with barged-in sand and shell. Backfilling on the big stream crossings was done immediately by hydraulic and clamshell dredges.

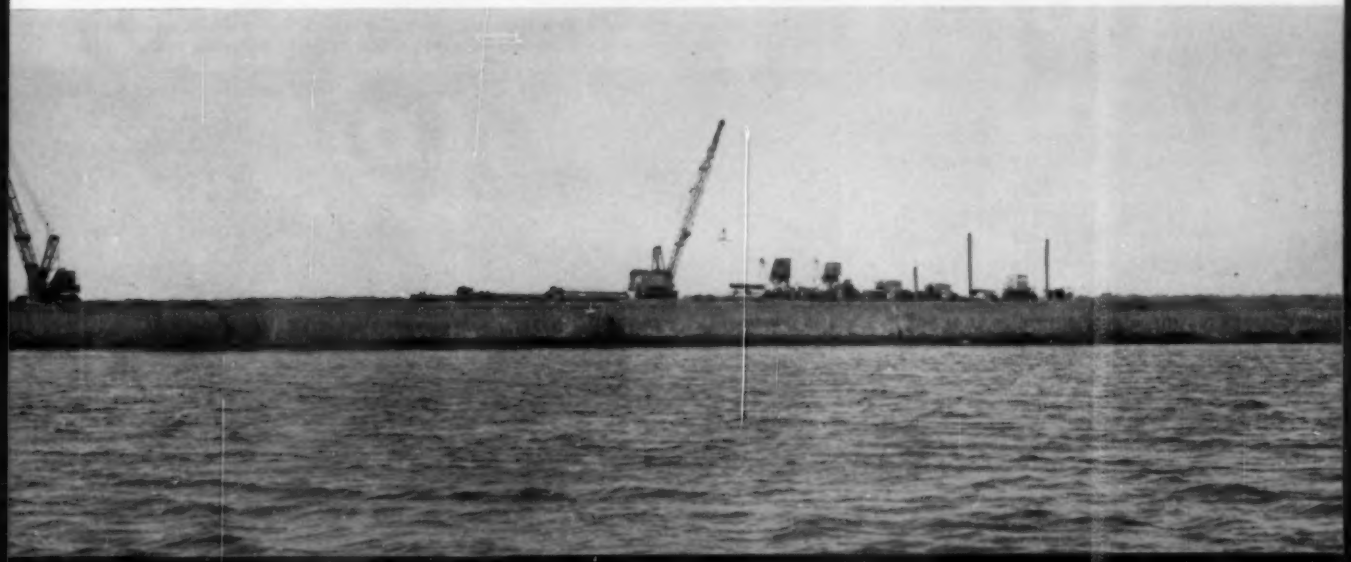
Wolfe's toughest excavation problem was to maintain an open trench against the slippery marsh, said C. S. White, the whiteheaded and bronzed secretary-treasurer-engineer of the Circle Dredging Co.

About 80% of the land which the pipeline traverses is marshy; the other 20% is sand, White explained.

"The big job is to keep the material from sloughing back into the trench after it is once excavated," said White. "When the material does slough back, that means we have to resweep the trench ahead of the pipelaying barges."

Wolfe's contract with Houston required that it have at least eight ma-

A 54-B dragline (left) cleans the trench ahead of Houston's three-barge pipelaying spread. A Northwest crane handles pipe.



chines available for excavation of canals and trench. All of Wolfe's own excavators on the project were Bucyrus-Eries—two 88-B's, a 71-B and a 54-B.

Machines were rented from the Glaser Construction Co., Lafayette, La.; Sam Carline, Morgan City, La., and C. F. Bean, Contractor, Plaquemine, La. Glaser provided two rigs—a 54-B and a Lima 1201; Carline used a Link-Belt 595 and two old Bucyrus-Monighans; and Bean employed a Lima 2400 on the dredge *C. F. Bean*.

The machines carried dragline and clamshell buckets ranging in capacity from 3 to 6½ yards.

All ten excavators work from spud barges. Two of them—one of Wolfe's 88-B's and the Lima on the dredge *C. F. Bean*—are tub mounted. The others are conventional crawler or walker-type machines and are positioned on the barges on 10 x 10 timber mats 18 feet long and four feet wide.

The barges are of all-steel welded construction. Typical measurements are: length, 120 feet; width, 32 feet; depth, seven feet. The barges are equipped with electrical generating plants.

Spuds, which measure about 2 x 2 x 36 feet, provided a source of stability for digging. Two of the spuds are located amidship; the third, or tagging, spud is placed in a recess at the stern. A three-drum hoist is used to operate the spuds.

To move forward, the two side spuds are raised as the operator casts the drag bucket or clamshell to the side securely into the muck or clay. The pull on the bucket moves the barge forward.

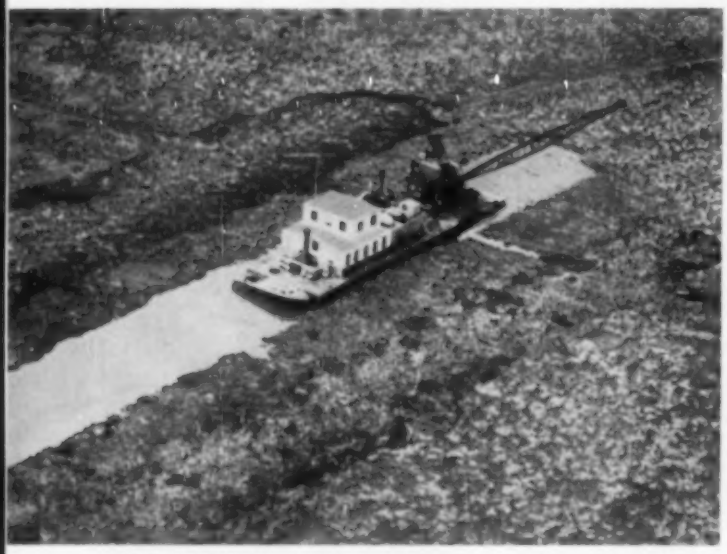
"Our operations range from Miami, Fla., to Galveston, Texas," said L. R. Clem, Wolfe's general superintendent. "We try to bring our barges into drydock once a year, where we sandblast them and apply three coats of paint," continued Clem, a tall (about 6 feet 4 inches) and friendly southerner who from appearances might have anchored a football line not too many years ago.

The barges have large storage tanks holding about 18,000 gallons of water and 24,000 gallons of fuel, sufficient to maintain operation about two months. Additional fuel and water supplies are brought to the work site by other barges.

And, far different from what one might expect after gazing at the virtual nothingness of the area in which the barges operate and the kind of a job that is required, conditions for the men who work on them are excellent.

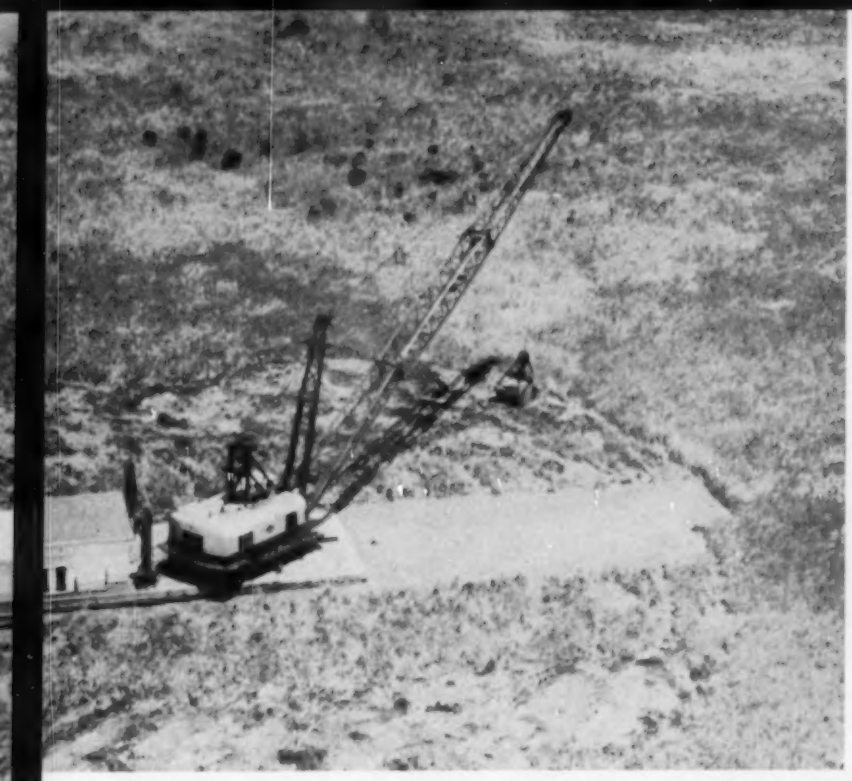
The barges have living quarters for as many as 12 men. They are equipped with galleys. Some of the barges have all the conveniences of home, including such things as stoves, refrigerators, deep freeze units, air conditioning, radio and television. Newspapers and emergency supplies are flown to the barges nearly every day.

By their own choosing, because they sometimes need as much as a day to reach their homes from the barges, crew members remain on duty 10 days, then take off five days. The excavators work



A Link-Belt 595 clamshell drops a load of muck to the side of the flotation canal.

A 3½-yd. Bucyrus-Erie 54-B dragline digs trench east of the Atchafalaya River. Wolfe had at least eight excavators available on the project, including rented rigs.



Tub-mounted on the modernly-equipped dredge C. *F. Bean*, a Lima 2400 digs flotation canal with a 6½-yd. clamshell. The dredge has living accommodations for 12 men.

round the clock to keep ahead of Houston's pipelaying barges. Two 12-hour shifts are maintained.

The barges are accessible only by boat and seaplane. Crew members are transported by boat to a jumping off station for their homes. The boats also perform liaison duty between the barges.

Wolfe maintains contact with its barges by two airplanes—its own twin-engine Grumman Widgeon and a leased Cessna 180 single-engine plane. Clem visits the rigs nearly every day, generally taking off from Houma, about 40 miles southwest of New Orleans.

Clem graciously provided *Excavating Engineer's* representatives with the Cessna on a brisk, sunny day in early April so that they could make a first-hand inspection trip of Wolfe's pipelining activities.

Tub-Mounted 88-B

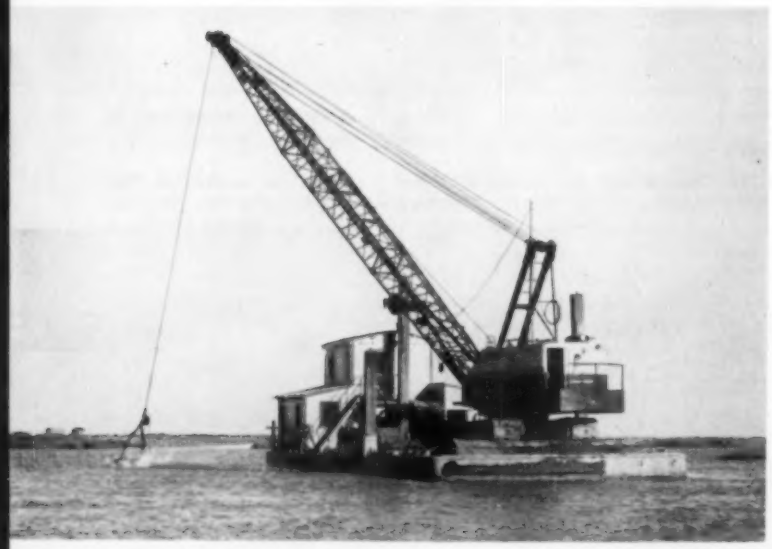
All but one of Wolfe's own and rental rigs were deployed that day in an area between 70 and 85 miles southwest of New Orleans. The only excavator not on the pipelining job was the tub-mounted 88-B, which was preparing an oil well location in Mallard Bay, about 200 miles west of New Orleans. Oil well location work will be discussed later in the article.

Tommy (Red) Meadours, whose hair is bright enough to guide a fleet of planes on a foggy night, handled the Cessna on a smooth takeoff from the New Orleans Industrial Canal. Though only 22 years old, Meadours is an experienced pilot. He has been flying for several years, including a year in Panama. Now he is employed by Rebelair of New Orleans.

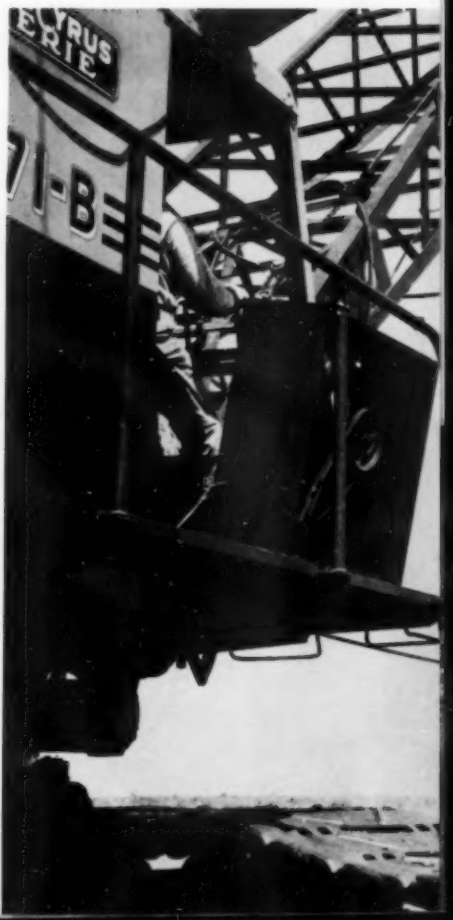
As the plane climbed to a cruising altitude of 3,000 feet, the crescent-shape of New Orleans, caused by the winding of the Mississippi River, re-

Both a Lima 1201 (foreground) and an old Monighan use clamshells on this job. The natural gas line was being installed for the Tennessee Gas Transmission Co., Houston.

Barge No. 3 gets a tow to a new location by a powerful tug boat. The 88-B helped keep the barge moving with its bucket.



(Above) Wolfe's 54-B prepares to head for a new assignment. (Below) Here's a closer view of the old Monighan.



vealed itself. New Orleans soon was left behind; replacing it was the table-top flatness of the Delta land—green, watery and strangely interesting.

Below us, through the seemingly endless and criss-cross patch-work of the flotation canals, the mechanical activity of the delta land began to unfold dramatically. Over there, an oil well derrick was being floated into position. In the distance, a clamshell reached out to dig a clump of marsh from a new flotation canal. Supply vessels moved through the Inland Waterway.

Two tug boats were pulling a dredge with an 88-B—it was one of Wolfe's on its way to a new location. We would see more of it later in the day.

A half hour out of New Orleans, about nine miles west of Cocodrie, we approached the first of Wolfe's active barges. It was barge No. 1, whose 54-B was sweeping clean a trench a few hundred feet ahead of Houston's pipelaying setup of three barges. Later that day, the 88-B replaced the 54-B, which was to move elsewhere under the plans of the fast-moving setup.

Wolfe's 71-B, on barge No. 2, was digging a flotation canal 23 miles east of the Atchafalaya River. Glaser's 54-B and Lima 1201 were working a short distance east of the river. The 54-B was using a 3½-yd. dragline bucket to dig trench; a 3-yd. clamshell was being employed on the 1201 to excavate flotation canal.

Swinging a 6-yd. clamshell bucket, the dredge *C. F. Bean* was digging flotation canal about 15 miles east of the Atchafalaya.

Carline's Link-Belt 595 and Monighan, with 3½ and 3-yd. clams, respectively, were digging flotation canal on the Amelia lateral.

Drop In For Landing

Meadours dropped the Cessna in for a comfortable landing and tied up at the bow of barge No. 1, whose 54-B was sweeping a trench it had excavated the night before. Behind the 54-B was the Houston pipelaying spread. The distance from where the 54-B was excavating to the spot where the coated steel pipe dropped into the water as the barges moved forward was approximately 800 feet.

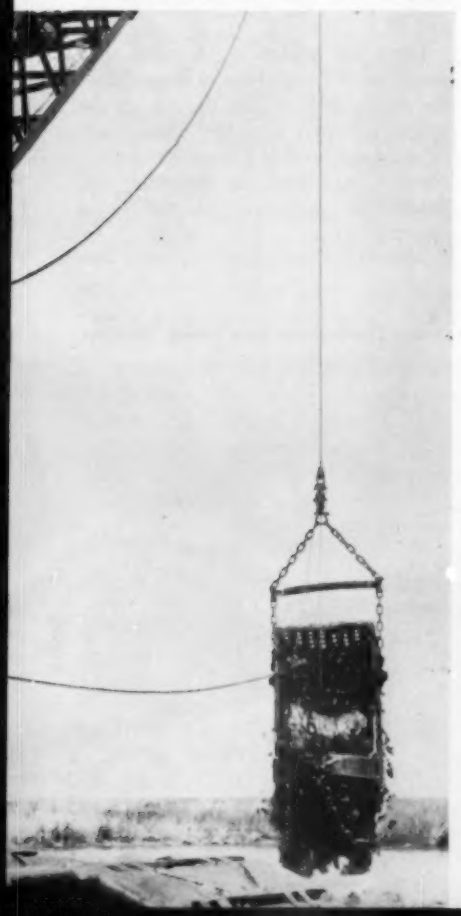
Houston's spread consisted of three 110 x 30-ft. barges lashed together. Six 40-ft. lengths of pipe, passing over a series of rollers, could be processed at one time.

The barges were designated as A, B and C. The A barge, off which the pipe slid into the trench, had a radio house (Motorola marine radio system), and a small Jaeger concrete mixer. Storage space for welding rods and supplies was provided on barge B, which also had an American Hoist and Derrick general purpose hoist, seven Lincoln 300 and two Lincoln 200 welders. Two Caterpillar D8 sidebooms positioned the pipe and guided it on the journey over the rollers.

A Northwest 95 crane handled the pipe on barge C, the closest barge to Wolfe's 54-B. The steel pipe, covered with a 4-in. thick layer of concrete, is barged to the site of the laying operation. Pipe of 24-in. diameter, full wall thickness, was being laid the day of *Excavating Engineer's* visit.

The barge had two lineup stations. The stringer bead passes were made, after which the pipe was moved to the finish welders. Plicoflex dope was applied and one-eighth yard of concrete was poured on each joint before the

(Below and right) Here are bucket views of the 71-B and the Lima 2400 at work.



Houston's pipelaying spread consisted of three barges lashed together. This view from Wolfe's barge shows Houston's C barge with its Northwest crane.

pipe was dropped out of sight into the trench.

At capacity, the barge could lay about 3,500 feet of pipe a day.

Fuel is carried to the lay barges by the pipe barges. The fuel is pumped the full length of the three barges. A supply barge, carrying sand and cement, lay several hundred feet to the side of the barges. An Insley ½-yd. clamshell worked on the supply barge. Men who worked on the lay barges lived in a quarter house provided by Houston. It was located two miles from the barges.

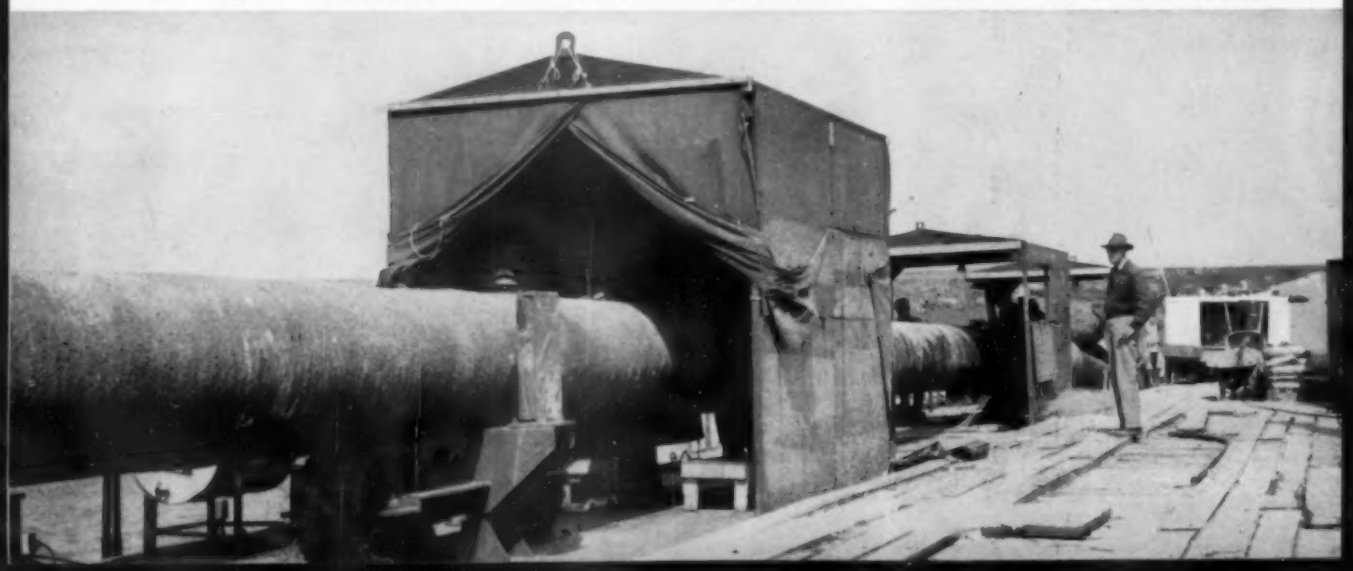
H. E. Murphy was superintendent of the pipe laying spread. R. E. Rice was welding foreman.

An unexpected treat was provided after Meadours landed the plane behind barge No. 2, whose 71-B was digging hard sand and clay from the flotation canal with a 3½-yd. dragline bucket. The treat was a home-cooked meal prepared by Mrs. Thelma Davis, wife of the barge foreman, C. N. Davis. Mrs. Davis lives on the barge with her husband. Living quarters are provided for five other crewmen.

Davis has worked in 39 states. His three children were born in three different states. But he likes the life on the barges, especially with Mrs. Davis there to cook and provide a home-like atmosphere that ignores the lonesome and foreboding appearance of the Delta country.

Mrs. Davis set a luncheon table that consisted of pork, ham, spinach, lima

Six 40-ft. lengths of pipe, passing over this roller system, were processed at one time. There were two lineup stations.



Cat D8 sidebooms position the pipe on B Barge. Workman at left holds a buffer.

Here's the buffer at work on a length of 24-in. diameter pipe. The pipe, covered with a 4-in. thick layer of concrete, was barged to the site of the laying operation.

(Above) A weld is applied to the pipe. B barge was equipped with nine Lincoln welders. (Below) Concrete is poured on the joints before the pipe drops into trench.

beans, peaches, cake, coffee and milk. Such spreads contribute to the high morale of the crewmen, Davis said. If the Wednesday luncheon spread was any criterion, *Excavating Engineer* wondered what sort of feasts Mrs. Davis prepared for Sundays.

Next, we visited the dredge *C. F. Bean*. The big Lima 2400, powered by a Cat D-397 engine and swinging a 6½-yd. Yaun clamshell from its 120-ft. boom, was digging flotation canal. Four diesel fuel tanks in the hull of the dredge have a capacity of 32,000 gallons—3½ months' supply. Four fresh water tanks have a capacity of 32,000 gallons.

The dredge has living accommodations for 12 men. It has such refinements as an electric stove, deep freeze, refrigerator, water heater, air conditioner, butane heat, radio and television.

Anthony Guidry is captain of the *C. F. Bean*.

The Cessna caught up with barge No. 3 and the two tugs pulling it to a new working area. When the current pushed the barge into the side of the canal, the 88-B helped get it moving again with several casts of its dragline bucket into the muck and clay.

After being under tow for nearly a day, the barge neared its destination. The tugs cut off and, using its spuds

Continued on page 66

Excavators and trucks team up to remove gravel from the bed of the Guarico River for use in construction of Guarico Dam.

Dam Will Fatten Their Cattle

By Albert S. Keshen

Venezuela builds a nine-mile long earth-fill structure across the Guarico River Basin for $50 million. Irrigation of 470 square miles will improve livestock and increase agricultural reserves.

ONE of South America's big water control problems will be solved with completion this summer of the nine-mile long Guarico Dam located in Venezuela's rolling plains about 190 miles south of the capital city of Caracas. The dam is an earth-fill structure calling for the placement of 14 million cubic yards of earth, clay and rock. It will have a concrete spillway at its extreme south end.

This attempt to improve nature by artificial means, utilizing the Guarico River, is dramatic evidence of the pooling of Venezuelan and American talent to produce a modern engineering achievement. Irrigation of the plains will improve livestock, especially cattle, and increase agricultural reserves. One estimate is that the dam will increase agricultural production by 540% in the Guarico River Rasin.

The plains, which lie behind the mountain-fringed coast of Venezuela, cover approximately 260,000 square miles, an area comparable in size to Texas. The area, however, is subject to seasonal weather variations. These variations in the past have left either flooded or parched land. Guarico Dam is being constructed to correct this condition.

Cattle, which formerly had to be driven long distances for feed during the dry season and wound up on the table as tough beef from thin carcasses, soon will benefit from the "controlled drinks" that the new dam will provide.

The southern end of Guarico Dam is 1¼ miles from

Calabozo. The northern end is about two miles from El Rastro. The embankment is from 560 to 660 feet wide at the base and approximately 40 feet at the top. Maximum height of the dam is 100 feet.

An artificial lake with an area of about 94 square miles will be created by the dam, which will offer flood control during the rainy season and provide irrigation for about 470 square miles during the dry season. The dam will provide storage for 460 billion gallons of water.

The water level will be controlled at the southern end by 10 sluice gates, each 15 feet high, electrically operated and automatically controlled. The intakes for irrigation water are two concrete towers, which will feed the water into 14-ft. steel tubes. The tubes will carry the water to the main irrigation canal about four miles below Calabozo. The water will be distributed into the area by 290 miles of canals.

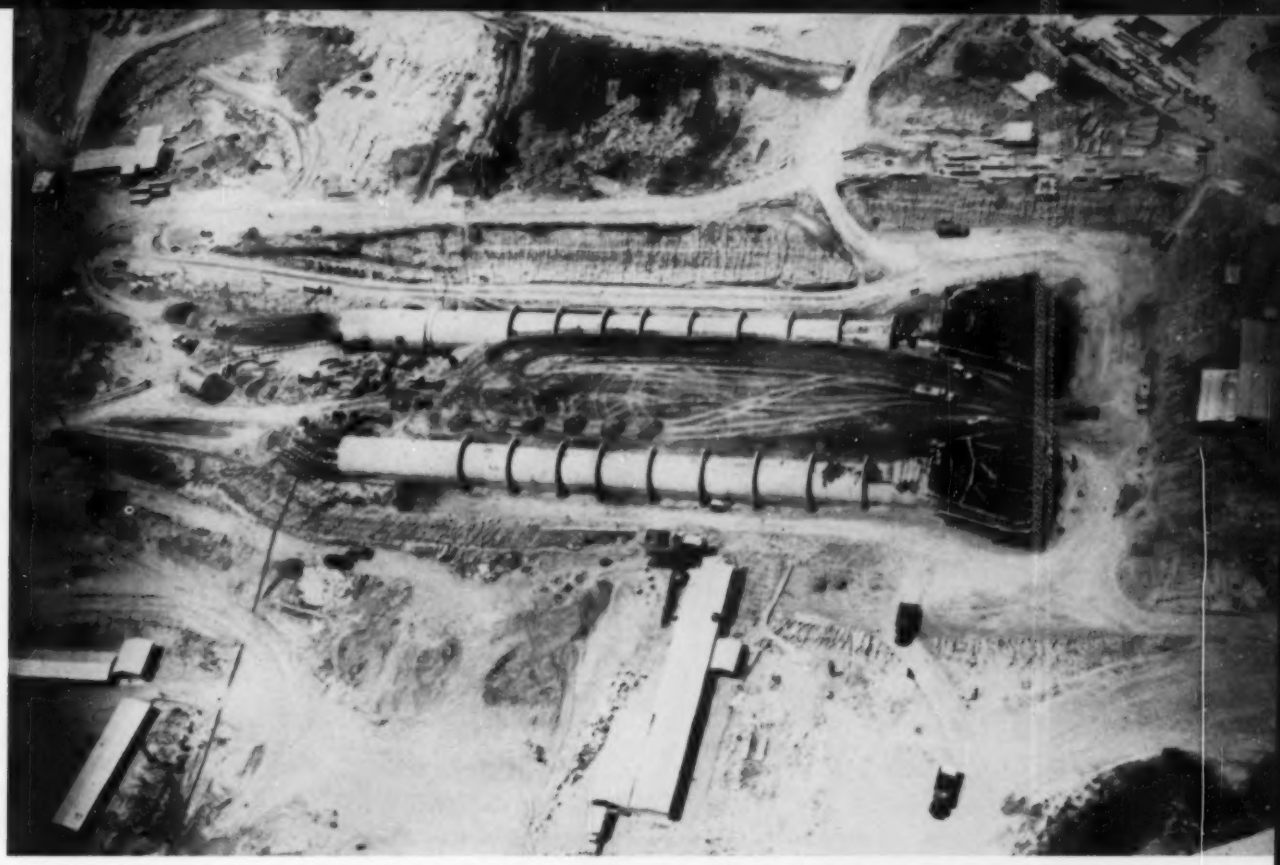
Complete Project Soon

The project, which was begun late in 1954 and was scheduled to be completed this summer, is being carried out under the public works program directed by President Marcos Perez Jimenez. Most of the funds for the $50 million project are derived from oil revenue. Part of the financing is being provided by the United States Export-Import Bank.

Work on the project has been handled by a joint venture, or "consorcio," rep-

Here's a general view of the big earth dam under construction. The spillway is in the foreground; dam outline is in the background.

This is the view from the inside of one of the 14-ft. irrigation pipes that will carry precious water to 290 miles of canals.



An aerial photograph shows the concrete barrels of the outlet works, which are located near the south end of the dam.

resented in the contracting firm of Briviasca-Conticca-Groves. The first two associates are Venezuelan. The American associate is S. J. Groves & Sons Co., Minneapolis, Minn.

Project officials include: Hugo A. Brillembourg, of Brillembourg-Villegas Asociados, C.A., executive president; Carlos Guinand, of Conticca, executive vice president; J. R. Villegas, of Brillembourg-Villegas Asociados, C. A., head engineer; Jose Gomez Baldo, of Constructora Nacional de Tuneles y Carreteras, C.A., assistant head engineer; Herbert A. Griffis, Jr., work project manager; E. D. Sargent, head superintendent; and Paul A. McDonald, assistant project manager. Griffis, Sargent and McDonald all are members of the Groves organization.

Government Sponsors Job

The Ministry of Public Works is responsible for the construction of the dam. Other phases of the project are charged to the Ministry of Agriculture, which will plan and supervise the settlement of the areas. Modern 400 and 500-acre farms will be set up in the area. About 30 such farms were to be ready for occupancy at completion of the project. About 80% of the land will be used to graze cattle. Rice, corn, beans and sesame will be grown on the remaining portion.

Preliminary surveying and hydrographical studies were made in 1954. Information needed for the design of the various structures of the system was obtained at four hydrometric stations. The calculations of evaporation

Construction of the outlet works was in progress when this picture was taken. In the foreground is the base of the control structure. Guarico Dam is nine miles long.

Pulled by an Allis-Chalmers HD-21 crawler tractor, a Euclid loader spills gravel from the river bed into a Euc bottom dump.

rate were based on statistics obtained at the evaporation measurement station at Calabozo during the previous 10 years.

Speed was the keynote once the project was begun. Deforestation was the first step. After the site was cleared, the river was diverted from its natural bed through a false channel. This left bare an area .6 mile long and 820 feet wide across the river bed. With the diversion completed, excavation of the gravel in the river bed—the only source of the material for 200 miles—was made easier. This gravel was essential for construction of the embankment, which consists of 60% gravel and 40% clay.

Riprap was utilized to face the upstream portion of the embankment to keep the wave action from eroding the dam. Limestone boulders were trucked

Construction of Guarico Dam was included in a public works program being directed by Marcos Perez Jimenez, shown (with tie) on an inspection tour of the project site.

Among the many pieces of equipment active are these tractors and scrapers.

A crane is used to drive sheet piling as work proceeds on one of the structures.

in from Dos Caminos, a mountain quarry site located nearly 50 miles from the dam.

About 3,000 men were employed on the complete project at peak activity, working two 10-hour shifts per day. Only 800 of them were detailed to the excavation job. Conforming with Venezuelan law, 75% of the employees are nationals. They are housed in two camps at staff headquarters at El Rastro.

Under the stepped-up program, an average of 100,000 yards of material was scheduled to be moved every 24 hours. A comparatively high wage scale and a bonus incentive program to hurry completion of the program transformed the area into a land vibrant with energy.

Executing such a tremendous task called for diversified machinery able to take heavy punishment and not require much maintenance. Machinery specifications were rigid because of the long distance from the source of supply—the United States. Heavy equipment

Continued on page 68

This 1¼-yd. dragshovel cut the trench for an 11,000 ft. sewage outfall line to serve Palos Verdes Estates in Los Angeles County.

Veterans Prosper on Tough Contracts

by Ray Day

THREE men, with a sense of construction's greatest need in their area, have kicked off to a good start by forming the newest pipeline company in Los Angeles. They are Alfred A. Bostow, William Bowne and J. E. Parker, all skilled pipeline veterans. Together they have created the A.B.C. Construction Co. of California, with Bostow as president and Bowne and Parker as vice presidents.

Since the company was formed in June, 1954, it has bid successfully—either directly or by subcontract—on a type of project which seems to be growing more prevalent. This is the $300,000 to $500,000 job, a type which usually represents a comparatively short stretch of pipeline of various types. One of these $500,000 jobs recently was completed under a subcontract with Morrison-Knudsen Co., Inc., Boise, Idaho, at March Field near Riverside, Calif. It included excavation and placement of lines for water, fuel, storm drains, compressed air and other utilities on a major expansion job.

Two very interesting projects are under way now, and they are both difficult. One is a $221,000 construction

Three skilled production veterans pool their talents to start new contracting firm; partners give personal supervision to two short but tough water and sewer jobs in Los Angeles.

contract, supervised by the County Sanitation Districts of Los Angeles, near Palos Verdes Estates south of Los Angeles. It calls for about 11,000 feet of 21 and 24-in. sewage outfall laid through some of the worst hard-rock excavation in Los Angeles County. The other is a $541,000 project for the Los Angeles Department of Water and Power in Hollywood. It covers the replacement of an old water supply line with a pipe of larger diameter. The job is the final link in tying together two important points of the department's distribution system: Eagle Rock Reservoir and Hollywood Reservoir. This one has tough digging, too.

Partners Run Jobs

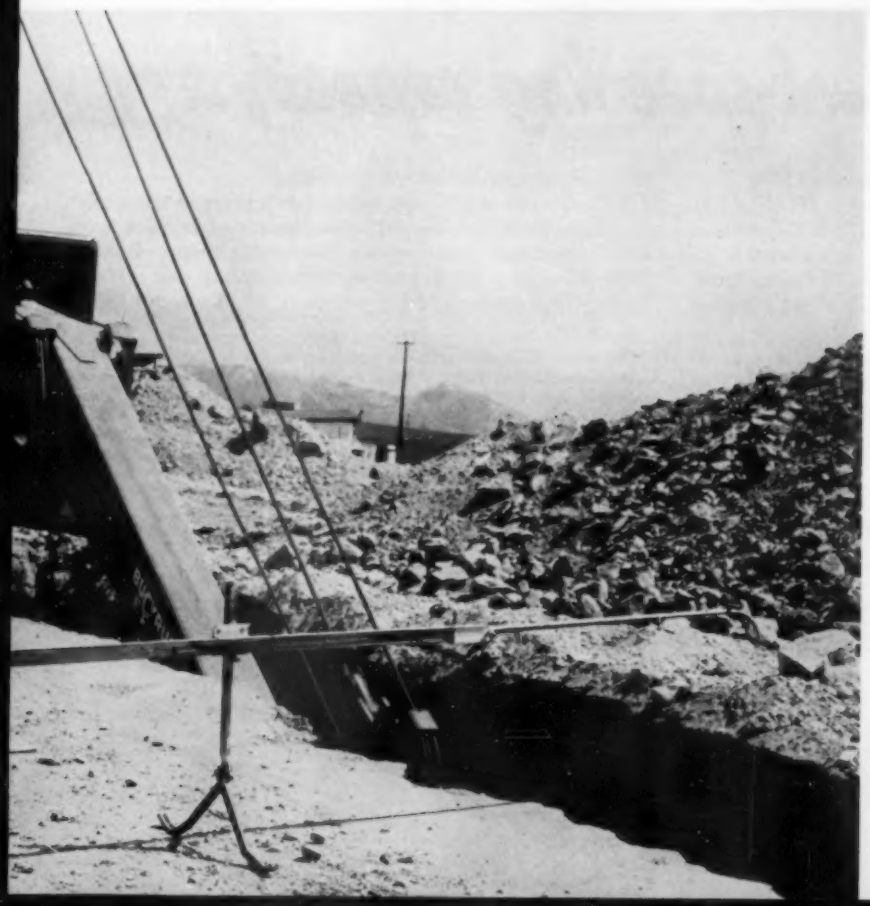
Bostow, Parker and Bowne have been quick to assume all of the responsibilities of management in the new company. They have eliminated a considerable amount of supervisory expense by assuming personal direction of their own jobs. Bowne, for example, currently is running the Palos Verdes Estates job as general superintendent, and both Bostow and Parker are running the Hollywood project. Modern construction work depends greatly on the close coordination of equipment, supply and effort, but no type of work is governed more strictly by this rule than pipeline work. In a congested work area like Hollywood, the arrival of pipeline joints, sand ballast for cushion and backfill, dump trucks, welding rod, and literally hundreds of other items must be timed with split-second precision.

Operator Bill Corder looks at his handiwork after straps were installed to hold the Caterpillar diesel power unit down to resist bucking as the 38-B dug unblasted rock.

Another important point which the three men have covered has been the standardization to some extent in the selection of construction equipment for doing pipeline work in a hurry. The company has built up its equipment list slowly, almost on the conservative side. On the equipment list now is enough machinery in the form of dragshovels, bulldozers, truck cranes, air compressors, jackhammers, pavement breakers and dump trucks to handle several large size projects. When more work than this amount is in backlog, as is the case now, rented equipment is used to fill that need.

Because the three hard-working partners are steering clear of any danger of over-extending themselves business-wise,

Continued on page 40



Trench grades were checked accurately above ground with a Smith Gradeliner.

"New Bonus-Powered International®

give work-speeding capacity..new

To grade the Indian Hills home project site near Sioux City Country Club, Contractor William C. Grady, LeMars, Iowa, must move 132,000 yards of dry clay—must make cuts 35 feet deep, and fills 25 to 40 feet deep. Two new International 55 Payscrapers, push-loaded by TD-18 crawler, replaced two crawler-scraper units, with these big results:

"The two new 55 Payscrapers have jumped our daily yardage 1500 yards—*80% or better*—compared to crawler-scraper units replaced," reports Owner Grady. "The new 55's have proved that even on very short hauls, their rubber-tired speed pays off. Now, our same

"Years of excellent performance from our International crawler fleet, backed by fine service, helped our company grow to a fleet of 11 International crawlers," states Nor-Vel Construction Co., Ferguson, Mo. Here's two of their TD-24's, helping move wet clay on a large Black Jack, Mo., housing job.

"The new TD-9 has got it—more reserve power that speeds the job," states Owner Gene Elkins, Pontiac, Mich., of his new bonus-powered International crawler—shown doing "clean-up" and grading on a 306-home project near Detroit. "It's really got zip—dozes dirt extra fast in second gear."

"Short-haul yardage soars"

outfits . . . . *operating ease"*

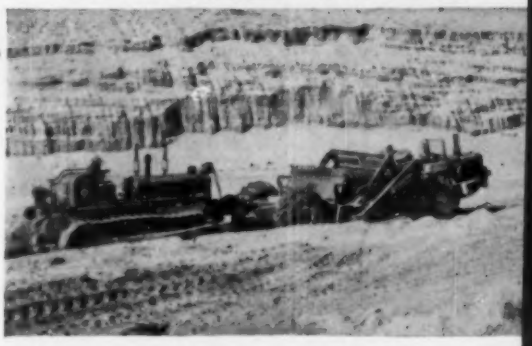
manpower moves practically double our former yardage. Loading averages 42 seconds in dry, hard-packed clay. Easy operation and plenty of power make new Payscrapers the operators' favorites."

Why not try a bonus-powered International outfit on your job? See your nearby distributor for a demonstration!

See you at the ROAD SHOW— CHICAGO Jan. 27 to Feb. 4, 1957

"I can rip up concrete with pry-action breakout—without strain on the crawler," declares J. E. Johnson, Knoxville, Tenn., of his new bonus-powered TD-9 International Drott Skid-Shovel. "Best grading loader I've operated. Has no-strain steering, fine job vision."

4 new TD-24's. "Work ability and distributor service were major factors when buying 4 new TD-24's," says Tony Petitto, Jr., Byron Construction Co., Clarksburg, W. Va. These tractors replaced 4 competitive crawlers. A fifth TD-24 on this stripping job has worked 7500 hours.



"95% International since 1940—"

"Loose, dead sand—almost impossible to load—yet we average 2500 yards daily where I believe other scrapers would fail miserably," reports Contractor N. V. Lamb, Lusk, Wyo. "The powerful International TD-24 Torque Converter and easy-loading 55 Payscrapers are giving high output in tough material."

"Since 1948, preferred International engines"

"With only routine care our International machines stand up," state Howard and Dorsey Hall, Hall Sand & Gravel, Denver, Colo. Their new TD-14 (142 Series) is shown stockpiling sand. Their International fleet includes a TD-14 Skid-Shovel, four power units!

INTERNATIONAL HARVESTER

INTERNATIONAL Construction Equipment

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

The 1¼-yd. McCaffrey dipper digs through hard conglomerate without the benefit of blasting. The result is a deep, neat 38-in. wide trench with no over-excavation.

31-ft. deep ditch at one setting. In fact, the 40-ft. length of extended boom and dipper can reach 33½ feet down when the front end is digging between the crawlers of the machine.

Sewer to Serve New Homes

Purpose of the job at Palos Verdes Estates is to create a new sewer outfall leading from new residential construction in the Estates' limits southerly toward Whites Point, where a new ocean outfall disposal system is being constructed. Palos Verdes Estates consists of a spectacularly beautiful range of hills bordering along the blue Pacific between Rendondo Beach and San Pedro. For a long time construction of homes in this area lagged because of a certain remoteness to the area. The establishment of many airplane factories and other defense and industrial facilities not too far away in the past ten years has opened up an enormous amount of new residential construction here.

A.B.C.'s 11,000-ft. contract is but one section of a project several miles long. The job is being financed largely by private funds, but engineering and technical supervision is under the County Sanitation Districts of Los An-

Veterans . . .

Continued from page 37

they are successfully bidding contracts in a dollar range well within the company's financial capacity. While these men certainly do not regard their new organization as another Engineer's Limited, Macco Corp., or the like, the fact that a piepline job is difficult does not easily scare them. They simply buy or rent equipment which will do the toughest jobs, and then stay on hand personally to make sure that everything is coordinated.

The sewage outfall line excavation at Palos Verdes Estates is possibly as difficult a project as the new firm has yet undertaken. There are some trenches in this project 31 feet deep. There are trench limits in plans and specifications which make it necessary to excavate the trench to precise lines. A large percentage of the excavation is in rock so hard that it either has to be drilled and shot or hammered to pieces before removal by the dragshovel. In anticipation of just such work as this, the company started 1956 by purchasing new a Bucyrus-Erie 38-B dragshovel whose front-end equipment will easily dig the

Vice President J. E. Parker, left, and President Alfred A. Bostow of A. B. C. Construction Co. coordinate equipment and effort on the Hollywood water line job.

On the Hollywood water supply line job, a truck crane equipped with an Owen clamshell loads pavement to a GMC 620 truck.

geles, a municipal agency dedicated to an orderly, efficient handling of sewage problems outside the Los Angeles corporate city limits.

In planning the work, Vice President William Bowne of the company analyzed the job and decided to excavate the trench from the low or southerly end working uphill toward the north. Average depth of trench excavation is 14 to 15 feet, with maximums of 31 feet deep. In one short section there is a minimum depth of seven feet, but this holds only for 500 feet.

It is difficult to find sand or dirt in the entire project; most of the formations a visitor will see are either granite, Palos Verdes limestone, cemented conglomerate, or a dense, dark-colored igneous rock which appears definitely to be of volcanic origin. It has been referred to as basalt, although it is not in an area where basalt flows have been proved. The job passes through some residential areas, crosses scenic Palos Verdes Estates Drive in three places, and cuts through agricultural lands which once were the mainstay of this region before building commenced.

According to Bowne, purchase of the

A Bucyrus-Erie ¾-yd. dragshovel in background uncovers a section of the old riveted steel water line. The pipe is cut apart to clear intersecting utility lines and taken up.

A rented Northwest Model 6 dragshovel trenches through a caving area as workmen hurry to weld a pipe joint. This picture shows how tight the operation had to be.

38-B dragshovel definitely has saved considerable drilling and powder work, which would otherwise have been necessary on his job. While Bowne is no more an advocate of hard use of equipment than are his other two partners, it was necessary on this project to hand a peculiarly tough assignment to the 38-B machine.

Limit Pay Yardage

Excavation specifications limit the pay yardage to eight inches beyond the sides of the pipe. In a trench that deep, that limit is, of course, good business so far as the contracting agency is concerned. But the removal of cemented conglomerate, fairly hard granite and some fractured basalt to those neat lines has been a tough assignment indeed. In fact, it is highly desirable to excavate as much of this trench as possible with the 38-B without the use of powder. Explosives introduced into the upper levels of the ditch would almost surely result in over-excavation, and that could be even more costly than putting the brunt of the work on the new dragshovel.

Bowne knew the machine would take it. On its first assignment, shortly after the machine was purchased, the 38-B was placed on the demolition of a 60-ft. square heavily reinforced concrete sewage sump which was being demolished at the Norwalk State Hospital. The heavily reinforced concrete walls and divider partitions in this structure were approximately 16 inches thick, and there was no room to use a breaking ball. The only way to demolish the concrete was to put the 38-B in close and actually break up the masonry and rip out the steel with its dragshovel dipper.

The work was so brutal that turnbuckles and heavy steel hold-down straps were attached as a precautionary measure from the floor of the machine to the top of the Caterpillar diesel engine which furnishes power. The gasoline tank on the starting motor on this engine also was reinforced with welded straps. Extra angle irons also have been installed at the boom point to take part of the shock of pounding by the sheave in the rigging. These strengthened connections have proved especially useful also on the Palos Verdes Estates job, where the brutal digging in tough rock is just as hard or worse.

General procedure is to excavate the trench in one pass, using a McCaffrey 1¼-yd. dipper measuring 38 inches wide between cutter teeth extremities. Excavation is carried down to grade or to rock so solid as to require drilling. Because the formations are so spotty, the 38-B frequently beats its dragshovel dipper against the hard material in the bottom of the ditch in an effort to break through and reach softer material beneath. Tooth breakage, of course, is heavy. But often the pounding efforts are successful and a tough spot can be removed without drilling.

Pneumatic Rock Drills

Where everything else fails, however, 6-ft. drill steel is used with Timken rock bits on a pair of Gardner-Denver hand-held pneumatic drills operated by a LeRoi air compressor. A center row of holes is usually sufficient, if column loaded practically to the top, to break a 38-in. trench. In a few cases where hard rock formations lay practically at ground level, they were drilled and shot first before the dragshovel moved in. Usual procedure, however, is to let the 38-B get all the excavation it can, after which the drills move in.

On an average day's excavation, the 38-B will cover a trench section 15-ft. deep and 200 feet long. The machine has of course exceeded that, and it has also sometimes been held up by minor

high-bottom drilling. The excavated material is either being dumped directly to the side of the trench where it can be used later in backfill, or loaded to several dump trucks which haul it away either to disposal areas or to points where it is needed as backfill. Final grades are being checked by a Smith Gradeliner.

The concrete outfall pipe joints, which are being manufactured in South Gate, Calif., by American Pipe & Construction Co., are trucked to Palos Verdes and unloaded at points along the site. Unloading is done by the same delivery truck winches which bring these sections to the job. Specifications call for a sand backfill cushion to be laid to exact grade under the pipe to protect it from sharp protruding rock. This sand material is being trucked in by Ford and Chevrolet dump trucks and is dropped in the trench by a Caterpillar D6 dozer. After the sand is fine-graded to exact level, a Lorain 414 truck crane sets each piece, after which a cement mortar joint is made.

Backfill consists of a sand cover over the pipe, with 12-ft. lifts of the material which originally came out of the trench following that. Specifications call for each 12-ft. lift to be completely flooded by jetting, after which it is

A bad cave-in here slowed operations until the water and muck could be removed. Caving conditions required use of screw-type trench braces at least every five feet.

Sand is immediately backfilled by a Cat D6 to prevent the sides from slipping in.

permissible to place the next lift. The company is placing a temporary asphalt pavement over the top of the line at the street intersections. This will be replaced with permanent pavement after final settlement has taken place.

Water Line Job

One of the toughest assignments which the company has undertaken to date, the job was started February 1, 1956, and was scheduled for June 15 completion. There was every indication that the job would be finished on schedule or before.

The company's job in Hollywood is truly a starring role in modern construction. The mile of water supply line, which extends from a point near Hollywood and Vine to Hollywood Reservoir, is the last main section of a trunk feeder which will connect Hollywood Reservoir with Eagle Rock Reservoir. On completion of the work, Colorado River water from the Metropolitan Water District will be available to Hollywood for the first time. The two streams which will merge in that reservoir will connect the far-off Colorado with mountain water from Owens Lake in the High Sierras, equally distant from Los Angeles. Both water supply points are about 300 miles away.

The job consists of removing an old 36-in. riveted steel header line and of replacing it with much larger 61-in. inside diameter pipe. The streets over which the trunk line passes are generally narrow and heavily traveled, so that there has been considerable work congestion.

Usual construction steps in this project, beginning also at the southerly or

Continued on page 69

C FULLPAK SCRAPER — A new, improved scraper for the time-tested C Tournapull prime-mover. Lower, wider bowl... boils better...loads faster...fills corners and heaps 18-cu. yd. payloads. Low push-block delivers direct line thrust of pusher to self-sharpening blade for maximum cutting power.

TWIN-C TRACTOR — World's most powerful and fastest push-tractor...gives bigger loads in shorter loading time. 416 hp and 4-wheel drive give 65,900 lbs. "drawbar pull". Rubber-tired speed, power steer, give quick line-up for direct-line push. Twin-C torque-converter speeds match loading speeds of modern rubber-tired scrapers.

New in '56!

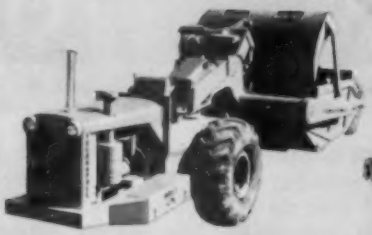
220 ADAMS GRADER — Handles same wide variety of work, within its power and weight range, as the larger Adams machines. 60 hp diesel engine, 9 forward speeds (including 4 optional creeper gears), and simple, efficient hydraulic controls. Operator can swing moldboard to high bank cutting position on either side of grader without leaving his cab position.

Earthmoving today is not what it was a few years ago. Today's jobs run bigger in yardage, include wider areas ...time-limits for job-completion are shorter...labor costs are higher... competition is keener. You should have these conditions in mind when figuring new work. With today's accelerated activity in highway construction, it will pay you *now* to analyze your present equipment in the light of future requirements.

To capitalize on the expanding opportunities ahead, you will need machines that *work* faster...*travel* faster

Get bigger production and make more profits with complete line of W **equipment**

Scrapers and Interchangeable Attachments



3 SCRAPER SIZES
7.5, 18, and 25-cu. yd. heaped capacities. 138, 208, and 293 hp respectively. Tournapull prime-movers interchange with trailing units shown here.

REAR-DUMPS
11, 22, and 35-ton capacities.

LIFT-AND-CARRY CRANES
10, 20, and 30-ton capacities.

FLAT-BED HAULERS
10, 20-ton capacities.

LOGGING ARCHES
138 and 208 hp models, plus 260 hp unit with rear-wheel electric assist for steep grades.

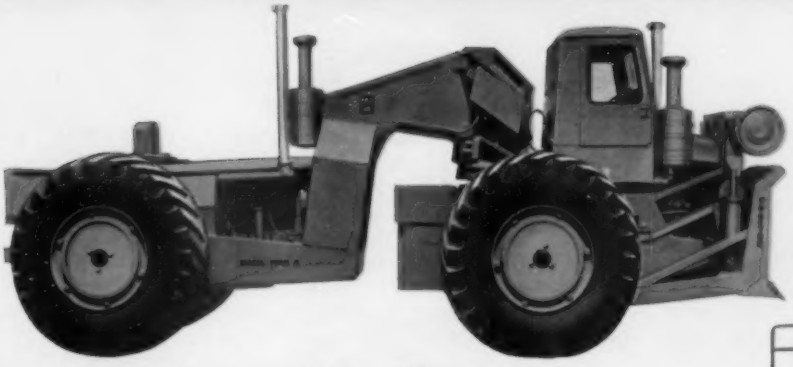
SIDE-DUMPS
10, 20-ton capacities.

BOTTOM-DUMP
18-ton capacity.

Note: Bulldozer and Snow-Plow available for use with 7.5-yd. D Tournapull.

LeTourneau-Westinghouse also manufactures:
Power-Control-Units, Rooters, Sheepsfoot Rollers, Jib Cranes, and Tournarope from ¼" to 1½" dia.

Tournapull, Tournatractor, Angledozer, Tournarope—Trademark Reg. U.S. Pat. Off.
Adams, Rooter, Fullpak, Twin-C, SwitchMobile, SwitchTractor—Trademark G-1093-G



SWITCHMOBILE — New rubber-tired diesel switcher cuts across tracks, yards, by shortest route...travels by highway...or straddles tracks to pull or push string of cars. 208 hp, weighs 35,640 lbs., outpulls any steel-wheel locomotive near its class.

. . . to help you handle more earthmoving contracts and make bigger profits

...and operate at *high mechanical efficiency*. The new 1956 machines pictured here meet these requirements.

For example, the new C Fullpak Scraper, with lower and wider bowl, heaps 18 cu. yds. fast...travels at speeds to 30 mph...saves valuable seconds on load, haul, spread, and return. The seconds it saves mean extra profits for you.

The new Twin-C Tractor...world's most powerful pusher...also warrants your consideration. Its 80,000-lb. 416 hp push helps big scrapers get bigger loads, in less time. It allows you to take advantage of the speed built into today's big modern scrapers...giving more yardage than any other pusher.

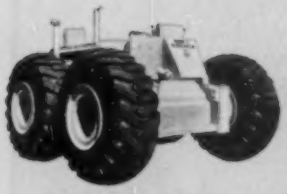
Another product, new in '56, is the Adams 220 motor grader. Use this high quality but competitively-priced grader for light grading and clean-up duties, freeing your larger graders for heavy-duty assignments.

Every one of these new dirtmoving tools in the extensive LeTourneau-Westinghouse line reflects years of constant development. All give you new production and profit opportunities well worth investigation.

In planning for your future, isn't it a good idea *now* for you to analyze your equipment needs to meet the new opportunities ahead.

Ask for specifications and pictorial literature on these new units. We'll be glad to arrange for demonstrations on your job, or take you to owners where you may see these machines in action. Write the factory now, or visit your nearby LeTourneau-Westinghouse Distributor.

Tractor and Interchangeable Attachments



TOURNATRACTOR
208 hp, with forward speed to 17 mph. 21.00 x 25 tires standard, with 26.5 x 25 wide-base tires optional, for greater flotation and traction.

BULLDOZER
Angledozer and Root Rake, optional attachments.

SNOW-PLOW
V-type, with optional wing.

CARRYALL SCRAPERS **PUSH-BLOCK**
16 and 24-yd. heaped capacities. No power-control-unit required. Operate by electric power from plug-in jack on Tournatractor. Sturdy Bumper and Push-Block available.

SWITCHTRACTOR
Rear-end has standard RR coupling and drawbar. Usual front-end tractor attachments.

Note: Logging-Winch, Tree-Pusher, and Root Rake also available for Tournatractor.

Adams Graders and Loaders

5 GRADER SIZES
60, 80, 104, 123, and 150 hp. Four larger sizes have 8 forward speeds to 26 mph, 4 reverse speeds to 13 mph.

SNOW-PLOW AND WING
Available as grader attachments, also "Snow-Blo" attachment for wing.

ELEGRADER
Plows dirt and moves it up conveyor for casting or loading. Attachment for Adams 440, 550, 610, 660 graders, and Cat 12.

V-TYPE SCARIFIER
Heavy-duty with replaceable points.

TRAVELOADER
Self-propelled, belt-type machine for picking up and loading loose material into trucks from windrow or stockpile.

Note: Power-Shift moldboard, Rotary Snow-Plow, and Bulldozer available for Adams graders.

News from the Field

Taconite Project Dedicated

Reserve Mining Company's taconite processing project at Babbitt and Silver Bay, Minn., was formally dedicated this month, signifying the opening of a vast new domestic source of high-grade iron ore.

Reserve has built and operates the world's first large-scale taconite plant. It is designed to produce 3¾ million tons of iron ore pellets annually for Armco Steel Corp. and Republic Steel Corp., Reserve's joint owners.

Reserve represents an investment of about $190 million, all of it privately financed. Over the years, it can make at least 500 million tons of iron-rich pellets from the hard rock taconite, which exists in tremendous quantities in northeastern Minnesota. Magnetic taconite once was considered worthless.

The taconite development is the result of nearly 40 years of research, much of it done at the University of Minnesota's Mines Experiment Station under the direction of Prof. E. W. Davis, for whom the Reserve plant is named.

Reserve's project, built in the wilderness of northeastern Minnesota, includes the large processing plant at Silver Bay, a smaller processing plant at Babbitt, the taconite mine, a 47-mile inter-department railroad, a harbor, 50,000 KW power plant and two completely new and modern communities.

Seaway Work Awarded

A joint venture of two Montreal (Que.) firms, Miron et Freres, Ltd., and the Mannibec Construction Co., Ltd., was awarded a $5,843,750 contract by Canada's St. Lawrence Seaway Authority for the excavation of 11,500 feet of overland channel in the Lachine section of the Seaway.

The work will extend upstream from the Honore Mercier Bridge through part of the Caughnawaga Indian Reserve to the dredged channel in Lake St. Louis.

Totals include 1,200,000 cubic yards of common excavation, 1,980,000 yards of rock excavation and approximately 10,000 lineal feet of dike construction. The dike will extend from a point near the south shore end of the Honore Mercier Bridge to Lake St. Louis.

Other contract items will include provision for a temporary water supply for the village of Caughnawaga and the construction of a water intake extension.

Work under the contract must be completed by Aug. 31, 1958.

The St. Lawrence Seaway Authority has awarded construction and supply contracts totalling $86 million.

Richardson Joins Bay State

Charles A. Richardson has been appointed vice president and general manager of Bay State Dredging & Contracting Co., Boston, Mass., marine division of B. Perini & Sons, Inc., Framingham, Mass. Richardson had served for 21 years with the Merritt-Chapman & Scott Corp.

Skyscraper Schedules Met

Schedules are being met in the construction of the world's first bronze skyscraper—the 38-story House of Seagram—at 375 Park Ave., New York City.

The construction schedule was set up in May 1955. Excavation was started January 16. Pouring of concrete foundation footings was begun April 2. Construction of the supporting steel grillages was begun May 16.

The George A. Fuller Co. is general contractor. The Bethlehem Steel Co. is fabricating the steel.

Burnham Heads Good Roads Assn.

John C. Burnham has been named the first full time executive secretary of the Maine Good Roads Assn. He retired July 1 as director of the Division of Special Services of the Maine state highway department.

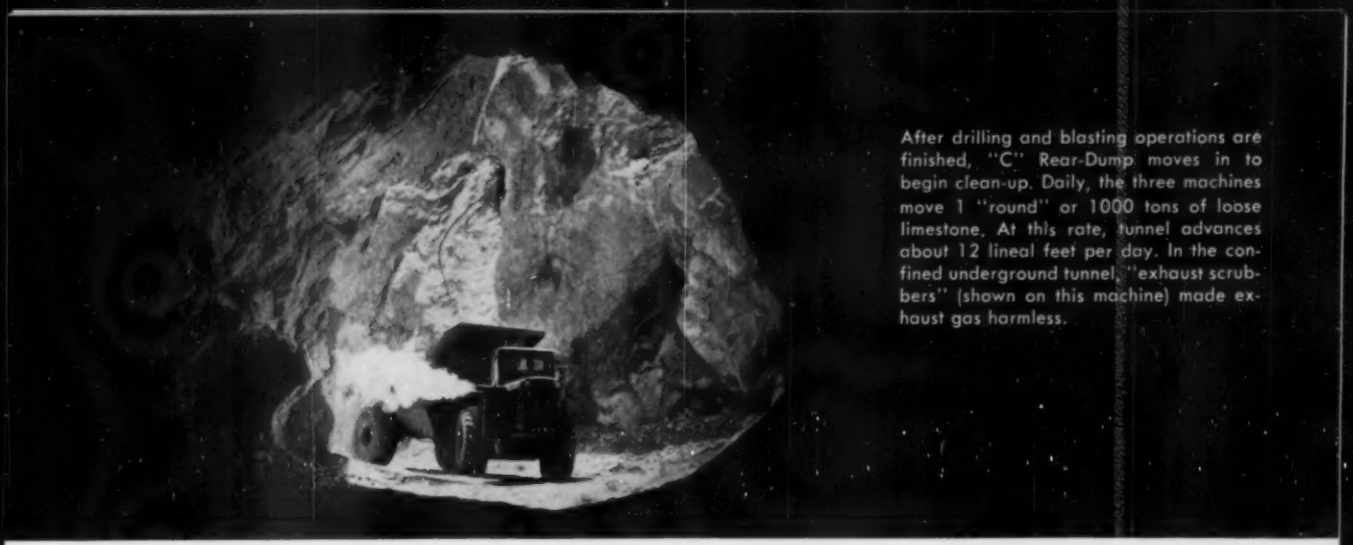
In addition to his duties as executive secretary, Burnham will continue as treasurer and will edit the association's publication, *The Maine Trail*.

Engineering Firm Elects

Five new members have been elected to the board of directors of Fay, Spofford & Thorndike, Inc., a well known Boston (Mass.) engineering firm which recently changed its structure from a partnership to a corporation. The new

Continued on page 48

"So, the weather is bad! . . . I still want that 'cab' back."



After drilling and blasting operations are finished, "C" Rear-Dump moves in to begin clean-up. Daily, the three machines move 1 "round" or 1000 tons of loose limestone. At this rate, tunnel advances about 12 lineal feet per day. In the confined underground tunnel, "exhaust scrubbers" (shown on this machine) made exhaust gas harmless.

Here's where maneuverability really pays off!

Recently the Riverside Cement Co., Los Angeles, California, began tough tunneling operations in their underground limestone quarry at Crestmore, California. Handling all hauling on this project are 3 C Tournapull Rear-Dumps.

Extremely cramped quarters, adverse grades, long hauls on narrow, winding roads, are major problems testing men and machines every day. However, the rugged "C" Rear-Dumps are doing an outstanding job on this rough assignment. Pictures on this page show how "C's" maneuverability pays off when meeting difficulties like these.

Working in extremely cramped quarters like this, big machines turned in dump position which moves rear wheels forward for extremely short wheel base. "C" in "dump position" (shown in this picture) can turn within 20' 8". Its 11' 4" height and 11' width gave ample clearance for the tunneling operation shown here.

Loaded in 6 to 7 passes of 1½-yard Marion shovel, Rear-Dumps averaged 18 tons of limestone per load. 10'4" overall width-of-bowl gives dipper a big "target", makes loading faster, and easier. Minimum spillage was a major advantage in the tunnel work. These "C's" have 18-ton capacity. The new model "C" has 22-ton capacity.

Floor of this tunnel has 10% adverse grades (7% on curves), making for heavy hauling in close quarters. Torque converters on units automatically balance power to load, make operation easier for operator, cut loss of momentum in shifting, prevent killing engine by inexperienced drivers. They also cut shocks in power train and reduce maintenance.

On the entire 6600' cycle, units had only 500' of level haul. The entire route was narrow and winding. Multiple disc air brakes, using 3,763 sq. in. of braking surface, made maneuvering easy... gave operator more confidence on narrow turns. Push button electric controls also contributed to ease of operation and safety.

At a touch of a switch by operator, hoist motor is activated. Body lifts quickly... 18-ton load is dumped easily and fast. Body swings below and behind rear wheels, preventing material from piling under unit. Front wheel drive gives operator control of unit at all times, even when dumping over edge of steep embankment like this.

Tournapull—Trademark Reg. U.S. Pat. Off. R-873-Q-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

News . . .

Continued from page 46

members are Burdette K. Beebe of Newton Highlands, Fozi M. Cahaly of Arlington, Harold H. Jones of Swampscott, Edward C. Keane of West Roxbury and Leon B. Turner of Ipswich.

Operation Deepfreeze

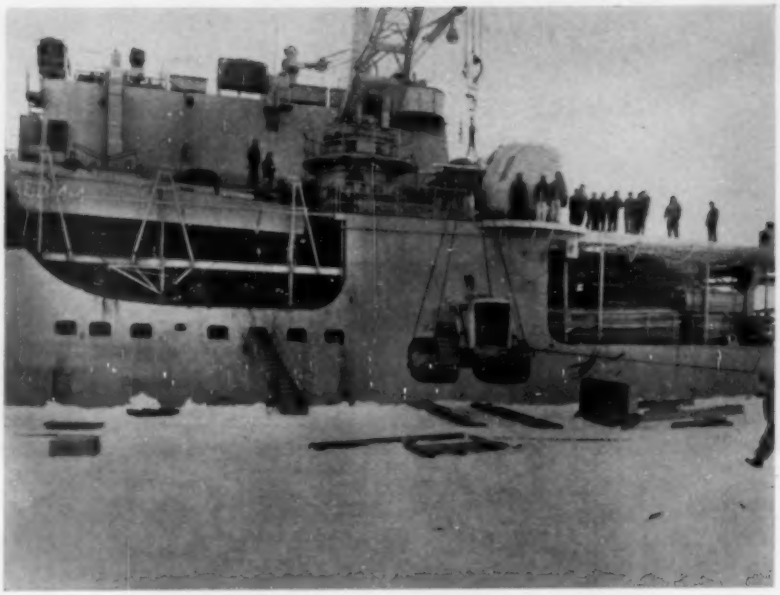
"Well done and indispensable" is the way officers of Operation Deepfreeze, the Navy's supporting arm of the Antarctic's International Geophysical Year, have described especially constructed tractor equipment used on Deepfreeze I. The task force, which returned to the United States at the end of March, was under command of Rear Admiral George J. Dufek USN (Ret.), a veteran of both the Arctic and the Antarctic.

The Navy report stated that the machines manufactured by Caterpillar Tractor Co., Peoria, Ill., "performed extraordinary work unloading cargo ships and ice breakers under extreme climatic conditions."

A second order for equipment for Deepfreeze II, which will leave the States in October, has been placed with Caterpillar. This order is valued at approximately $1 million as was the one last year. The additional machines, which will be used by a special Seabee mobile construction battalion, include 26 LGP No. 955 Traxcavators equipped with either fork lifts, bulldozer blades or buckets, seven LGP D8 tractors, two Twin Arc Welders and 19 Cat 30KW electric sets. The D8's are of the same design as those already purchased. Some of the LGP 955's will have more than one attachment to permit greater versatility.

The Seabees already have available eight LGP D8 tractors, nine LGP D2 tractors, three LGP D4 tractors, plus

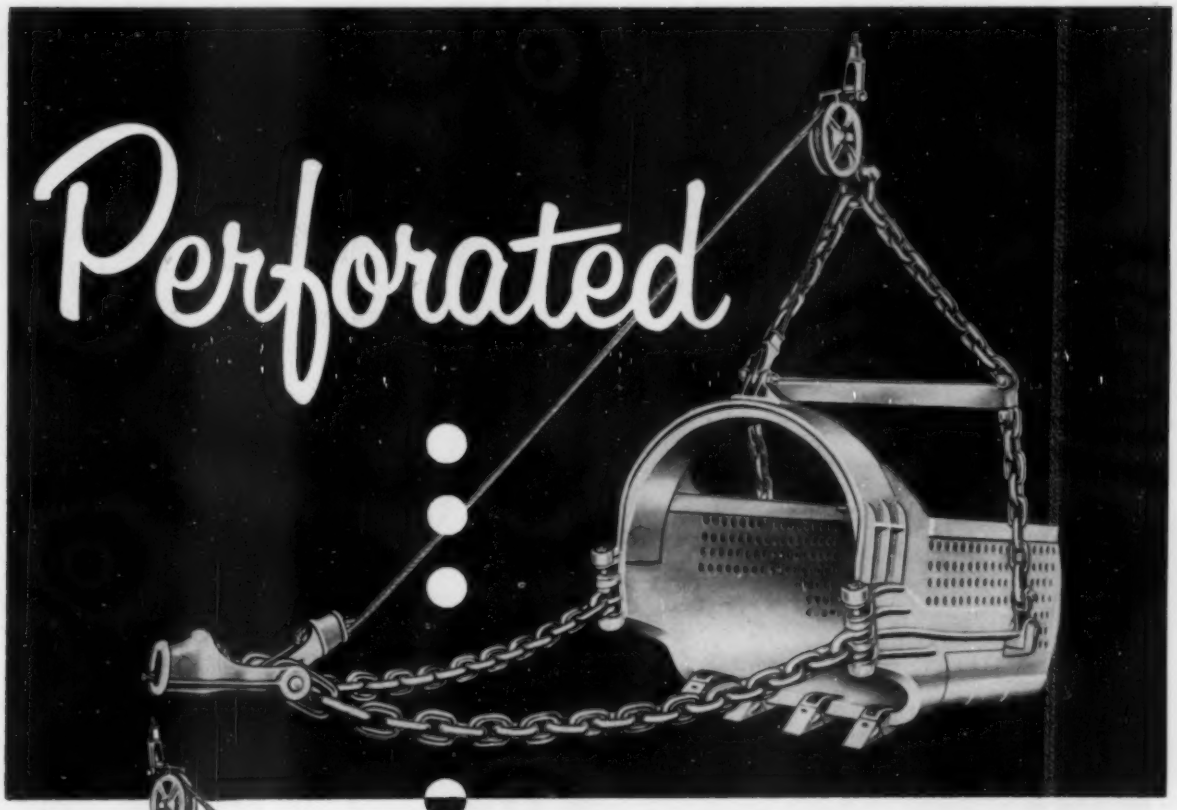
Continued on page 52



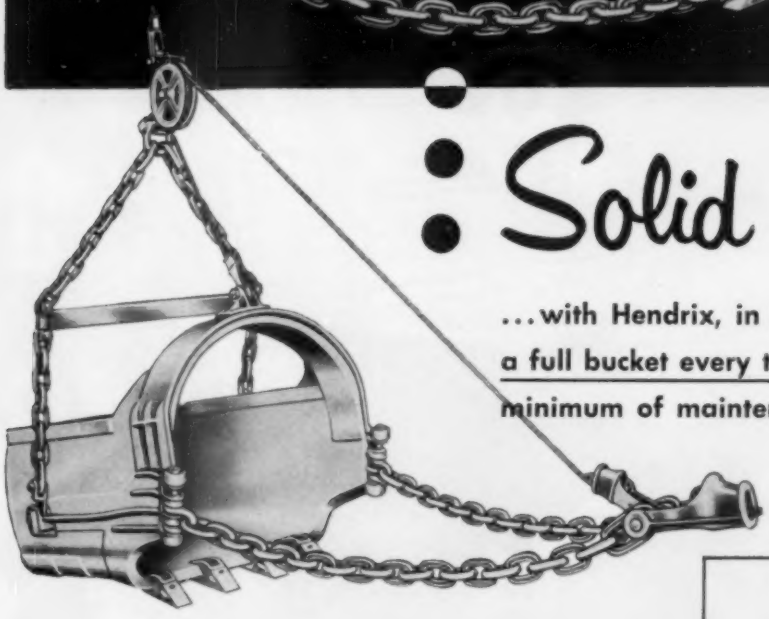
The crew of the U.S.S. Glacier, big ice breaker on Operation Deepfreeze, off-loads a tractor onto shore ice at Little America V. Dozer, shoes were attached later.

By mid-January 1956, Little America V looked like this. Living quarters are in the center background and fuel drums in the front.

Perforated



Solid



...with Hendrix, in either type, you get a full bucket every time. This plus a minimum of maintenance results in more profits.

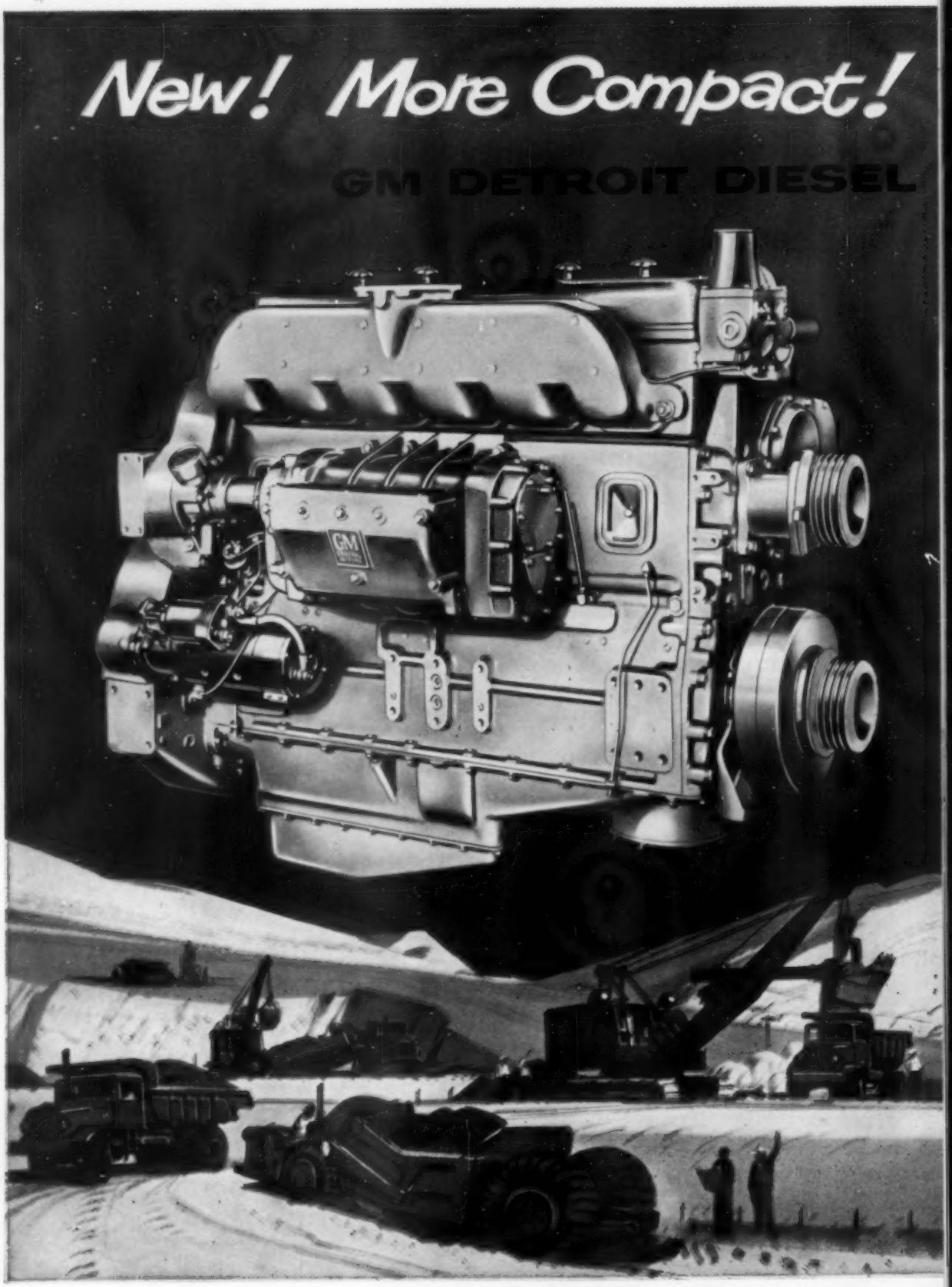
A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

Hendrix Lightweight DRAGLINE BUCKETS

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA


New! More Compact!
GM DETROIT DIESEL

More Versatile!

300-H.P. SERIES 110 ENGINE

Now available to fit a broader range of power equipment

Now the best 300-horsepower Diesel is even better than ever—ready to step up production and cut costs on any job you name.

It's the time-proved General Motors Series 110 Diesel, newly equipped with a side-mounted blower similar to the one used on the famous 71 Series. It's a more compact engine. It's shorter. It's lower. It fits more applications than ever before.

You can have this new GM Detroit Diesel Series 110 engine installed in off-highway trucks and move bigger loads faster.

You can use it to increase the power of heavy crawler tractors, scrapers and air compressors—get more work per day and per dollar.

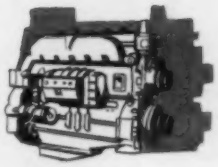
And, in practically no time at all, you can have this new Series 110 Diesel installed in almost any 3-yard shovel—to move earth faster at less cost.

The new blower makes the Series 110 engine far more versatile—available with *either* right- or left-hand rotation, and a wider range of accessory drive outlets—*four* accessory drives on the rear of the engine, and *four* fan-mounting positions on the front.

This new Detroit Diesel Series 110 engine takes on all comers in operating efficiency. It's a leader in work output per dollar. Let your local GM Detroit Diesel Distributor or Dealer show you what we mean.

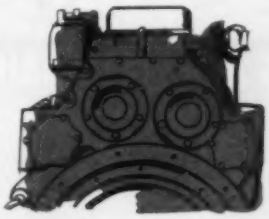
New Compactness—

The side-mounted blower eliminates former style blower at the end of the Series 110 engine and also cuts down height. Easier to install—easier to maintain.



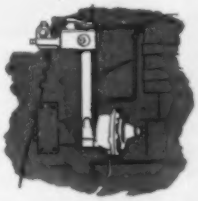
New Flexibility—

Four accessory drive outlets on rear of engine. You can direct drive both a hydraulic pump and an air compressor off the engine at the same time. New gear train features wider gears with increased helix angle for longer life. Blower and camshaft loads are split.



New long-life Cylinder Head

Has many design improvements, including integral water manifold and drilled passages for rocker-arm lubrication. Water manifold studs and gaskets eliminated. Outside rail gives extra rigidity.



New Governor

Is more easily serviced—utilizes many Series 71 parts. Provides for tachometer drive. An accessory drive may also be taken off the governor drive gear.

DETROIT DIESEL

Engine Division of General Motors, Detroit 28, Michigan

Single Engines . . . 30 to 300 H.P. Multiple Units . . . Up to 893 H.P.

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

AMERICA'S LARGEST BUILDER OF DIESEL ENGINES

PUT ALL YOUR PROFITS IN ONE BUCKET!
OMAHA DRAGLINE BUCKET
Omaha Dragline Buckets get out and dig in for you...meaning bigger profits with every load. Alloy steel cutting teeth are tough and sharp. It's faster, smoother working. Nearly 50 years of "know-how" assures quality that lasts in the field. You can't buy a better bucket!
Write today for catalog of complete information and specifications for four types available.
DRAKE-WILLIAMS MOUNT • OMAHA, NEBR.

News . . .

Continued from page 48

sixteen electric sets which will supply electric power for the huge five-station operation which the U. S. will sponsor at the end of the next year.

The Seabees found during Deepfreeze I that the D4 permitted hauling sufficiently large loads to make them practical. Two additional LGP D8's are replacements for machines lost. The Arc Welders will be used in the construction of metal fuel storage tanks, and for other welding purposes. The only other tracked vehicles on Deepfreeze are personnel carriers.

Virtually all supplies were hauled from shipside to base site at Little America and Hut Point (now Williams Air Operations Facility) in McMurdo Sound by the LGP crawlers and sled. The tractors were busy maintaining the trail, leveling sites for the buildings, pulling the nine-ton snow-compacting rollers to construct airstrips and building sites. Hyster cranes on the back of some of the tractors were used to off-load heavy packages such as the 5,000 to 9,000-lb. electric sets and to set in place the 3,000-lb. sheet steel sections for fuel storage tanks. The D4's expedited off-loading of sleds and utility work in the supply yard at base site.

There were hazards. Two men were lost, one in an ice crack in the McMurdo Sound area, the other while caching fuel for the tractor-train ship scheduled for next October to Byrd Station. The hazards were ice cracks on the bay ice and crevasses on the shelf ice farther inland.

These cracks and crevasses had been spotted by men in planes, personnel carriers and on skis and, if not too deep, a tractor was brought up to fill the gap with snow. Otherwise, a Bailey-type bridge was employed.

"Personally, I prefer a boss who paces up and down when things go wrong."

One of the hazards was the comparatively thin ice at shipside. The D8's, which weigh 70,000 pounds, made off-loading particularly precarious. The bay ice might get as thick as six feet, but just as a precaution, the D8's were fired up before leaving the deck of the ship and the operator climbed aboard the machine before the boom rigging was slack and drove the machine away as soon as the rigging was cast off.

In most cases, the D8's employed in hauling sleds did not approach the ship. The empty sleds were pulled up to shipside by a D2 and the D8 winched the loaded sled away from the ship until the drawbar could be engaged.

In all, about 500 trips were made. The tractors hauled about 3,700 long tons of supplies and equipment an average 4½ miles at McMurdo and about 4,600 long tons at Little America. The latter figure included drum fuel.

Initially, about half the supplies were unloaded a comfortable 1½ miles from the ship at Little America. Then, when the big thaw came shortly after January 1, the Seabees spent a hectic sixty hours hauling those supplies the remainder of the five-mile total distance to base site of Little America V.

The latter portion of the route included 5% grades. Most of the time the tractors were able to haul in third gear three 11-ton sleds with 15-ton payloads. The D2's hauled up to 20-ton payloads on one sled. Often the D2's hauled the sled to the foot of the shelf ice, where the grades began, and the D8's took over at that point.

Trail maintenance work was a constant task proving the desirability of having bulldozer blades on the LGP D8's. One tractor was employed at this work almost full time. The trail at Little America was tagged "Whitney Highway" after the Seabee boss, Commander Herbert Whitney.

Site work was relatively simple. A one-foot cut of the powder-dry snow usually was adequate and most of the buildings were 20 x 40-ft. prefabs. The fuel tanks were 74 feet in diameter.

Some of the site work was done with the snow compacting rollers. Usually there were about two feet of soft snow on the top, and two passes of the nine-ton roller put the site in serviceable shape.

The tractors were given careful servicing. Fueling and greasing and remov-

ing any packed snow around the rollers and sprocket were done by the operator during the day or at the end of the shift.

Deepfreeze II will construct Byrd Station at approximately latitude 80°, longitude 120°, approximately 600 miles from Little America. This will involve the ten-tractor train, each hauling 100,000-lb. payloads, for which fuel was cached during the past few months.

Another station will be at geographic South Pole and 500 tons of supplies will be ferried 800 miles from Williams Air Operations Facility for this operation by Navy and 18th Air Force airlift. These supplies will be air-dropped.

Three new stations scheduled for Deepfreeze II include Weddell Sea and Knox Coast, to be slightly larger than Byrd Station, and Cape Adare, to be smaller than Pole Station. All stations will be used by scientists in the Antarctic winter of 1957-58.

Tasmania Tunnel Dug

Engineers from Australia, Germany, Austria, Italy and the United States combined their talents on a hydroelectric tunneling job in Tasmania, an island-state of Australia which lies off the southeastern coastline.

The 5,500-ft. long tunnel links the Nive and Derwent rivers to generate power for a station at Wayatinah. The break-through of the tunnel at Wayatinah was achieved in March.

Utah of Australia, Ltd., was awarded the $6½ million contract for the project, which was directed by John Reid of Oroville, Calif., a famous tunnel engineer. Tunneling experts from the above mentioned countries were among the 200 men working on the project.

The tunnel is 21 feet in diameter. Excavation of 90,000 cubic yards of rock was involved.

Hough Designer Honored

Jon W. Hauser, St. Charles, Ill., recently was given the sixth annual Industrial Design Institute award for his design work on the Model HH Payloader tractor-shovel manufactured by the Frank G. Hough Co., Libertyville, Ill.

The Payloader was the first piece of equipment of its type ever to be selected for design honors by the IDI.

The HH Payloader was one of three pneumatic-tired, four-wheel-drive tractor-shovels introduced in 1955 by Hough. All are similar in appearance but vary in size and capacity.

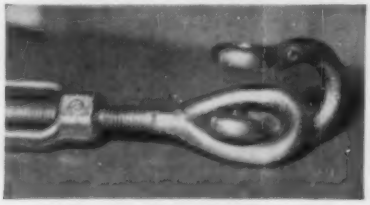
LOADS SAFELY BOUND

Safety conscious contractors tie down their truck loads of construction material with Laughlin Load Binders! There's no chance for injury or loss because the smooth lever action takes up 4½-inches of chain—holds lumber, piles, pipe, sheet material positively—safely! This tough, drop forged and heat treated binder is the most versatile available—and it's made for the strongest chain! One Laughlin binder will handle four chain sizes! Merely switch Clevis Grab Hooks to fit the chain you're using! Keep Laughlin Clevis Grab Hooks on hand to fit your chains—then there'll be no delays!

100% HOLDING POWER

When genuine Crosby* Clips secure wire rope rigging and tackle, men and materials are 100% safe! Positive gripping power gives confidence to workers, and confidence means top working efficiency. High strength steel is formed into the world-famous "Red U-Bolt"*. High wings on the drop forged base hold the rope securely in place. Look for the "Red U-Bolt"! You'll see it used on ropes of all sizes, because only Crosby offers a complete range of sizes to fit ⅛" to 3" diameter ropes!

*REGISTERED TRADEMARK



AN EYE FOR SAFETY!

. . . that's the eye design that was originated by Laughlin engineers. The ear of a shackle only one size smaller slips through the pear shaped eye—a design that conforms more closely to the line of pull—makes Laughlin Turnbuckles stronger and safer! Hex ends on the hefty body make take-up fast and easy. Weldless, hot galvanized turnbuckles, forged from special steel, are available from Crosby-Laughlin Distributors in a variety of end fittings and in sizes from ¼" x 4" to 2¾" x 24"!

Stocked and sold by leading distributors everywhere

CROSBY-LAUGHLIN DIVISION

American Hoist and Derrick Company

FORT WAYNE, INDIANA

In Minnesota Taconite...and the World Over

Bucyrus-Erie Ward Leonard Electric Excavators Help Boost Output the Low-Cost Way

Swinging an 8-yd. dipper, this Bucyrus-Erie 190-B shovel is loading taconite into ore cars near Virginia, Minn. Like other Bucyrus-Erie Ward Leonard electric shovels, it has advanced-design features that keep production up and costs down.

Its front-end design provides plenty of strength without deadweight, to move more material with less effort. Ward Leonard control assures rapid acceleration and deceleration for high-speed, coordinated operation. There is extra torque and ample usable power whenever needed.

In every feature, from boom point to treads, there's strength for low maintenance and maximum time on the job. Let us give you the facts on the right size Bucyrus-Erie shovel for keeping output up and costs down in your mining operations.

94L56C

GLOBAL APPROVAL
MOROCCO · PHILIPPINES · RHODESIA · UNITED STATES · VENEZUELA · ALGERIA · CANADA
INDO-CHINA · FRANCE · FINLAND · ENGLAND · CONGO
110-B 4½-cu. yd.
150-B . . 6-cu. yd.
190-B . . 8-cu. yd.
BUCYRUS ERIE

BUCYRUS-ERIE COMPANY •
• South Milwaukee, Wisconsin

Equipment You Ought to Know About

Sherman Backhoe

Manufacturer: Sherman Products, Inc., Royal Oak, Mich.

Claims: Sherman has introduced a hydraulic backhoe specifically designed and built for attachment to Fordson-Major tractors.

Known as the Sherman Major, the digger was developed after two years of experimentation. It is a heavy-duty unit which reaches as deep as 12½ feet. With a 180° arc of swing, it can clear a height of 8 feet 8 inches for loading trucks.

A feature is twin-crowd cylinders for extra balanced power.

The digger has heavy steel plate construction, large diameter hinge pins, replaceable hardened steel bushings and heavy duty steel castings. It has a newly-designed dipstick, boom, cylinders, bucket and sub-frame assembly.

A new bucket linkage provides maximum wrap-around and also a powerful stroke up to 5,000 pounds effective pressure through nearly nine feet of bucket lip travel. Steel cable linkage between two opposing, long-stroke, double-acting hydraulic cylinders provides smooth, positive control of swing action.

Torque Converter Governors

Manufacturer: Pierce Governor Co., Inc., Anderson, Ind.

Claims: The new Pierce series of governors is designed specifically for torque converter applications. The use of a simple flyball system in the governors provides dependable and economical control of tailshaft speeds throughout an extremely broad range in all types of applications. Symmetrical in design, the governors are readily adaptable to all converters having provisions for driving a governor directly with a belt, or with a flexible cable.

26-yard Cobra Quad

Manufacturer: Wooldridge Mfg. Div., Continental Copper & Steel Industries, Inc., Sunnyvale, Calif.

Claims: With heaped capacity of 26 cubic yards, the new Wooldridge Cobra Quad is the highest capacity three-axle type self-propelled scraper available today, according to the manufacturer.

Comprised of a 300-hp diesel 4-wheel tractor with a 2-wheel scraper attached through a heavy universal ball and socket yoke connection, the unit is rated at 26 cubic yards heaped and 20 cubic yards struck, with load carrying capacity of 56,000 pounds.

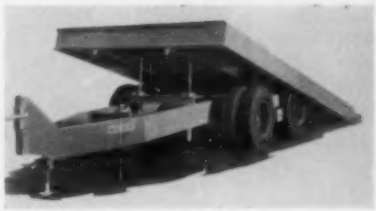
A fluid coupling drive provides smoother operation, easier shifting, and minimum strain on the power train. Air actuation of clutch, transmission and winch; hydraulic steering; foam rubber cushioned adjustable air-ride seat; and stability of 4-wheel tractor design are claimed to offer maximum ease of operation, safety and comfort for the operator.

Wide base 29.5 x 29 tires of 28-ply rating on scraper and tractor rear wheels are interchangeable and offer ample traction and flotation for full capacity loads under all operating conditions. The unit can make a non-stop 180° turn in 38 feet through use of steering brakes.

Ruggedness is reflected in the unit's weight of 63,400 pounds. An extra heavy duty helical gear syncro-mesh transmission provides nine speeds forward and two in reverse, with haul speeds over 32 mph.

Low profile bowl design, rear fulcrum application of power to the cutting edge, and the Wooldridge "boiling bowl" loading principle are said to have proved the unit's ability to load rapidly and easily in a wide range of materials through over a year of field testing on actual job operations.

Tilt-Top Trailer



Manufacturer: Miller Tilt-Top Trailer Co., 425 S. 92nd St., Milwaukee 14, Wis.

Claims: A 13-ton capacity, tandem axle Tilt-Top trailer has been announced by Miller. The new model, according to Miller, is designed to provide fast loading and unloading features of a tilting platform for hauling equipment such as smaller shovels, trenchers and finishers, backhoes and crawler tractors up to 26,000 pounds gross weight.

Structural strength is achieved both by massive construction and an arrangement in design whereby the heavy tongue extends back to the rear set of wheels.

A low overall platform height (33 inches) is obtained by placing the pivot point of the big platform toward the rear of the tandem axle assembly. The platform measures 8 feet x 16 feet 8 inches and is decked with 2-in. oak.

Its tandem axle walking beam is designed for independent wheel on each

Continued on page 58

NOT in the Contract

Hertzog was not as good a hunter as he pictured himself in telling accounts of his adventures, but what he lacked in ability he had in confidence. Duck hunting with some friends early one morning he sighted his game within easy shooting distance. As his double blast broke the stillness of the morning the bird went squawking away.

"Fly on, you fool bird," shouted Hertzog. "Fly on with your stubborn heart shot out!"

Two cab drivers met and one of them said, "How come your cab's painted red on one side and blue on the other?"

"It's a riot," came the answer. "When I get in an accident you should hear how all the witnesses contradict each other."

Visitor at Zoo: "Is that gnu very vicious?"

Guide: "Well, lady, no gnus is good gnus."

McTavish was engaged in a hot argument with a conductor as to whether the fare was 45 cents or 55 cents. Finally the enraged conductor picked up the Scot's suitcase and tossed it off the train just as they passed over a bridge.

"Mon!" screamed McTavish. "It isn't enough to try to overcharge me, but now you try to drown my little boy."

A singer wanted to go into grand opera so she asked an Austrian composer to hear her sing. He agreed to listen to her and accompanied her on the piano. Before she finished her song he banged the keyboard cover down in disgust.

"What's the matter?" she asked. "Don't you like my singing?"

"Like your zinging!" he cried. "The trouble with you is that vether I play on the vite keys or vether I play on the black keys, you always zing in the cracks."

A sailor, taking his first ride on the subway, lit up a cigarette as he sat reading the advertisements overhead.

Finally a conductor came along, tapped him on the shoulder and said, "Whatsa matter, can't ya read, sailor? That sign up there says NO SMOKING!"

"Yeah," replied the sailor, "but the one next to it says, 'Wear Playtex Girdles,' so I ain't payin' any attention to either of them."

Husband: "If I can't make it back from this trip this evening, I'll send you a note."

Wife: "Don't bother. I found the note in your pocket this morning."

Two men decided to go hunting.

"I'll bring all the hunting paraphernalia," said one, "and you bring the provisions."

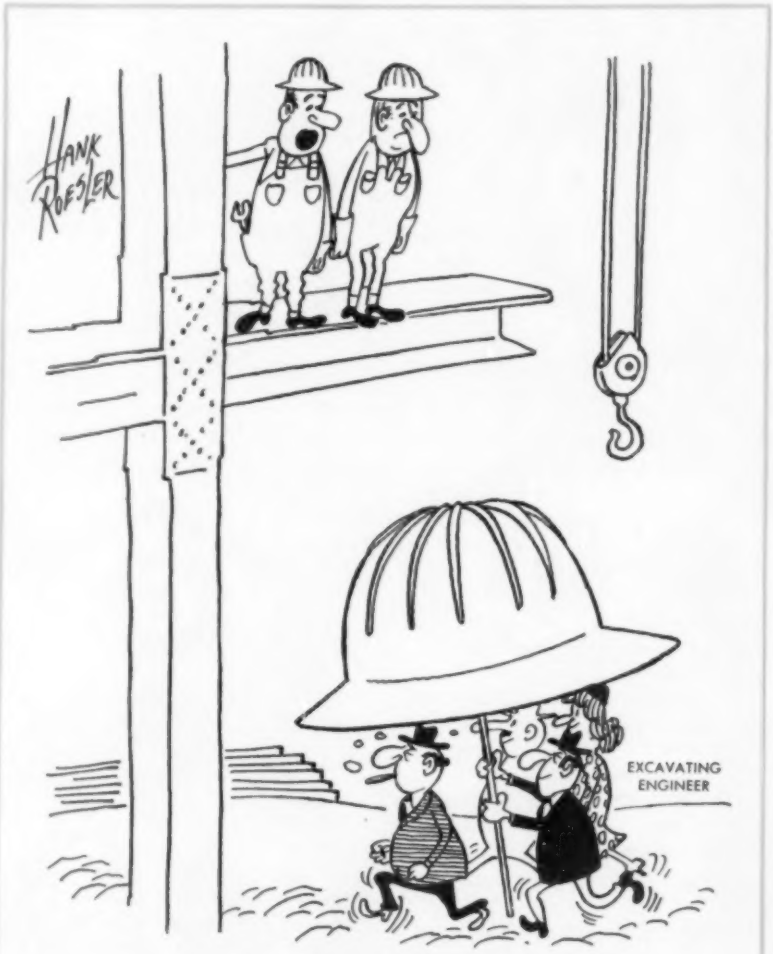
When the provisions man arrived all he had was one loaf of bread and four bottles of whiskey.

"Fine thing," snapped the paraphernalia man. "I leave the provisions to you and what happens! You bring a loaf of bread and four bottles of whiskey. What are we going to do with all that bread?"

The young bachelor appeared at the psychiatrist's office with his problem. "I've got pictures of Lana Turner, Marilyn Monroe, Betty Grable and Hedy Lamarr pasted all over my room."

"Then what's your trouble?" asked the doctor.

"All night long I keep dreaming about Gene Autry's horse."



"Here comes another guided tour of the job, Joe."

To celebrate its first birthday

THE D9 GETS INCREASED HP

—more power for your operation!

320 HP
(FLYWHEEL)

formerly 286 HP

260 HP
(DRAWBAR)

formerly 230 HP

The giant Turbocharged CAT* D9 Tractor, which since its introduction last year has set new performance standards in the field, now packs more power than ever to handle even bigger jobs. Its drawbar capacity has been increased from 230 HP to 260 HP—its flywheel horsepower from 286 to 320!

This increase in power reflects Caterpillar's policy of leadership in action. Combining research with practical field experience, there's constant product improvement to meet your needs for bigger production at lower cost. This policy applies to *every* product in the Caterpillar line—Diesel Engines, Tractors, Motor Graders and Earthmoving Equipment.

Now, with its increased horsepower, you can give the D9 tougher jobs than ever before. To match your requirements, it's available with torque converter or direct drive with oil clutch. For complete details about the more powerful D9, see your Caterpillar Dealer. Name the date—he'll be glad to demonstrate!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

D9—MORE POWERFUL FOR BIGGER PRODUCTION

New Equipment . . .

Continued from page 55

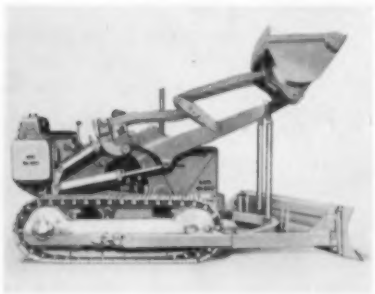
side. The walking beam is mounted on Timken roller bearings.

Designated the Model OT-13, the new Tilt-Top includes as standard equipment the platform and eight 7.50 x 15 12-ply tires. Among the optional equipment offered are a twin hydraulic tilt control, electric brakes, lights and safety chains.

Cat Traxcavator Equipment

Manufacturer: Caterpillar Tractor Co., Peoria, Ill.

Claims: Three new angling blade bulldozers, designed for use with Caterpillar No. 977, No. 955 and No. 933 Traxcavators, have been announced by Caterpillar.



The new bulldozers have been designated the No. 977A, No. 955A and No. 933A respectively. They have been developed as a part of Caterpillar's continuing program to provide a complete line of attachments for Traxcavators. Strong links are used to connect the bulldozer C-frame to the Traxcavator lift arms. The same hydraulic controls and cylinders are used for both bucket and blade.

The new bulldozers provide greater versatility for Traxcavators on such jobs as pioneering, road building and backfilling. They are especially useful for backfilling trenches after pipe has been laid and for replacing earth around new foundations.

Log and lumber fork attachments for No. 955 and No. 933 Traxcavators are also available. Each of the new fork attachments include a carriage which attaches to the lift and tip arms in place of the bucket. The tines are mounted on this carriage and can be adjusted to three different spacings.

Adjustable standards, which can be set in either a vertical or a 35° forward position, are located at the top of the tines. Placed in the forward position, these standards keep logs from rolling over the back of the fork. The upright position is for handling of square loads such as stacked lumber of palletized loads.

Although designed primarily to fill the needs of loggers and lumber yards, the new attachments can solve other material handling problems.

Increased versatility and work capacity to meet job requirements are assured with new buckets being offered as attachments for No. 977, No. 955 and No. 933 Traxcavators.

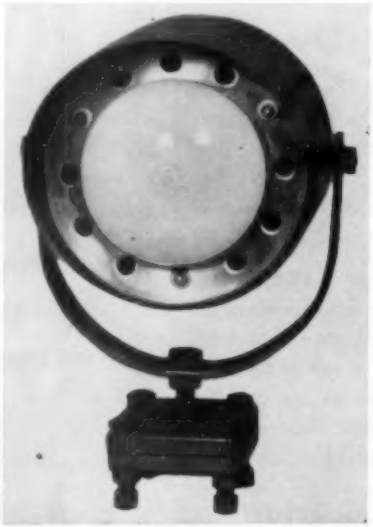
Designed to fill specialized needs in quarry and mining operations, rock handling, pavement removal and other tough jobs, the new buckets include heavy-duty, quarry and skeleton rock models.

The new quarry buckets are available for all three models of Traxcavators. Constructed of heavy, abrasion-resistant steel and equipped with welded-on tooth adapters and removable tooth tips, these buckets are ideal for all-around use in rock and similar materials. They range in capacity from one cubic yard to 2¼ cubic yards.

Heavy-duty Flood Light

Manufacturer: Phoenix Products Co., Metal Spinning Div., 4715 N. 27th St., Milwaukee 9, Wis.

Claims: The new Sturdilite 120-500 (1201 volt) heavy-duty flood lamp produces as much as 59% more light output per unit than previous models. Equipped with a 500-watt sealed beam lamp, the flood light has a ventilated housing to assure longer lamp life. The harp supporting the lamp housing is mounted in a rubber-cushioned base that absorbs vibration. The equipment is specially recommended for night-time operations in open-pit mining, stripping, drilling and quarrying.



Page Walking Draglines

Manufacturer: Page Engineering Co., Clearing Post Office, Chicago 38, Ill.

Claims: Page has introduced a new line of single deck walking draglines in capacities from 5 to 15 cubic yards.

The single deck construction of the new line, as seen in Page Models 721, 723 and 728, is compact. The new line is powered by a V-type horizontal diesel engine designed and built by Page specifically for dragline operation.

Page draglines are fitted with booms supported by means of a Becket Staff and cables which provide support for the boom at three equally spaced points along its length. This produces a rigid, trussed boom.

The design of the horizontal V-type diesel engine consists basically of two banks of horizontal cylinders, mounted one above the other. The connecting rods of the opposing upper and lower cylinders are connected to the same crankshaft journal, providing smooth power strokes, power, long life and maximum efficiency. An interesting feature of the engine is its automatic "power demand" control, which automatically reduces or increases engine output as required by the machine going through its operating cycle. This governor, in effect, permits the engine to "loaf" during loading operations when full power is not required.

Because of its close-coupled V-type construction, the engine has fewer and heavier main bearings and a shorter, stiffer crankshaft. The crankshaft pinion meshes directly with the main drive gear. Speed of the engine is 450 rpm.

The lubricating system is centralized. The system is controlled and fed from one centrally located pump. Another feature is the electric oil pre-heater.

Major working parts of the engine are completely accessible for inspection or

maintenance. The entire crankshaft, for example, may be inspected by removing the hood cover; any of the bearings, crankshaft and drive gears may be removed without disturbing or removing the cylinder heads.

Fleco Tools

Manufacturer: Fleco Corp., 1375 W. Church St., Jacksonville, Fla.

Claims: Fleco is producing two new tools.

One of the tools is a 6 x 7½-in. x 10-ft. 4-in. tool bar (upper photo-

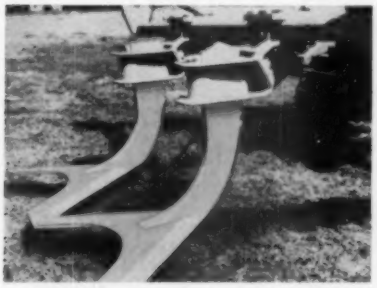
graph) designed to match the power and speed of the Caterpillar D7 diesel tractor. It is a heavy-duty tool bar which includes draft arms, tool bar and A-frame assembly for use with rear-mounted cable control units.

The tool bar can be mounted on the tractor without interfering with front-mounted equipment such as a bulldozer or rake.

The tool beam is a one-piece steel casting. The bar has ample adjustments made possible by screw jacks for adjusting the tool beam to match the tools and the type of operation desired.

The tool bar is designed for use with many of the tools used on Caterpillar tool bars, including sub-soilers and chisels, among other things.

The other tool is a heavy-duty land clearing implement, called the TB-RC-7 root cutter (bottom photograph), for



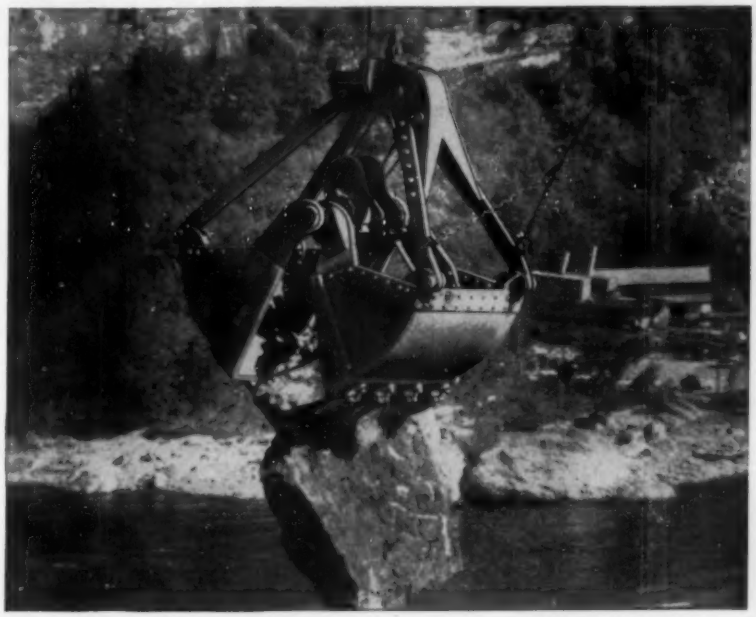
establishing and maintaining rights-of-way and clearing building and dam sites.

The root cutter is a V-shaped blade that cuts below ground surface. It is

Continued on page 60

Save your tough digging jobs for . . . .

ERIE'S NEW EXTRA HEAVY DUTY BUCKET BUILT TO HANDLE SHOT ROCK AND SHALE



Erie's new extra heavy duty bucket is for those really tough jobs —where the going is rugged—materials like shot rock, hard pan and shale. In fact, the new extra heavy duty model will come up with a mouthful of anything it can sink its teeth into. It hasn't been stopped yet.

All Erie clamshells are designed to bite hard and deep. The wide angle drop, the tremendous closing power of lever arm action, the multiple reeving and the big, sharp, manganese teeth—all these make a combination that really penetrates.

If you've a rough job coming up, or if you're tangled with something your present equipment can't handle, then you're talking our language. You need a new Erie Extra Heavy Duty clamshell. Why not learn more about this latest addition to the Erie line? Do it today.

These features make ERIE the bucket experienced operators prefer:

1. Top closing power from block and tackle, plus lever arm construction, plus precision balancing.
2. Manganese steel teeth and high carbon steel lips that bite up full payloads of even toughest clay and gumbo.
3. Rigid, one-piece, welded head that shrugs off bumps and jars. No shimmy. No wobble.
4. Two-line, continuous reeving. Adds up to 50% to cable life. Less down-time for reeving.
5. Low headroom for fast work in tight quarters; low center of gravity for easy positioning.

We will attend A.R.B.A. ROAD SHOW JAN. 28—FEB. 2, 1957

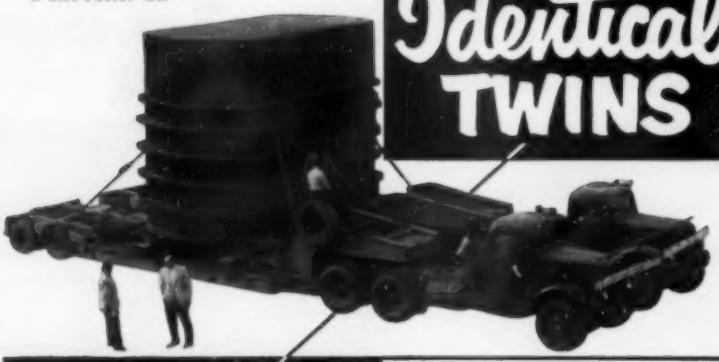
For catalogs, write Dept. E86

ERIE STRAYER CO.

986 GEIST ROAD • ERIE, PENNSYLVANIA

Makers of Extra Light, Light, Standard and Wide Rehandlers, General Purpose Heavy Duty, Extra Heavy Duty, Electric and Mechanical Hook-on Clamshells.

Photo courtesy of White Motor Co.



Identical TWINS

IN AN INTERESTING MOVE

ROGERS TRAILERS

Two identical Rogers Trailers — two identical White trucks — plus know how of the Duke Power Co., Spartansburg, S. C., gained by long experience, made practical the handling of this 150 ton transformer with comparative ease.

Each 50 ton trailer, generally used separately in moving various and sundry heavy loads, co-operated in handling its half of the 150-ton transformer.

Easy loading, safe handling, fast unloading and great structural strength in comparison to weight are features of all Rogers trailers.

The line includes trailers of all types and sizes — each reflecting almost 50 years of specialized trailer building experience — each thoroughly tried and proven under varying and difficult conditions.

Thoroughly investigate the features and reputation of Rogers Trailers. If you do so we confidently believe you'll "Choose A Rogers." Write for the new catalog.

Check and you'll choose a ROGERS

ROGERS BROS. CORP.

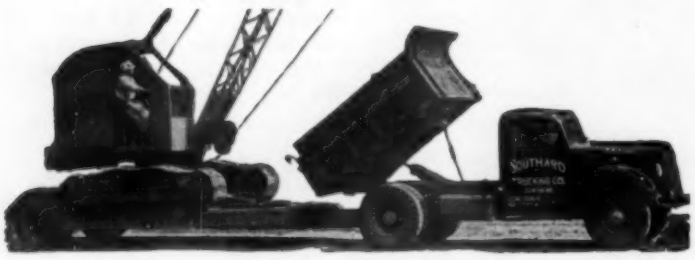
ALBION, PENNA.

Export Office: 50 Church St., New York 7, N. Y., U.S.A.
Cable Address: BROSITES

EXPERIENCE builds 'em

PERFORMANCE sells 'em

136 Orchard Street



"Truck bed being raised to connect Tagalong Trailer."

New Equipment . . .

Continued from page 59

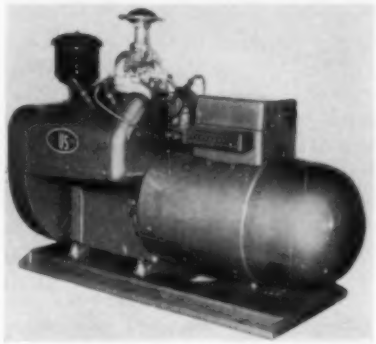
effective for slicing off brush and small trees up to 4 inches in diameter. According to Fleco, the cutter does not disturb grass on the surface. The cutter also aerates and subsoils the soil.

The blade or "plane" can be set to sever deep roots just below the bud ring.

The TB-RC-7 is designed to operate with D7 tractors using the No. 7 Fleco tool bar or with other track-type tractors of similar horsepower equipped with 6 x 7½-in. tool beam.

The TB-RC-7 can be used singly to cut 46 inches or mounted in pairs to take a 92-in. cut. It can be equipped with a Fleco rolling coulter assembly for operation in extremely trashy conditions. The root cutter can be adjusted to undercut from 3 to 26-in. deep.

U. S. Electric Plant



Manufacturer: United States Motors Corp., Oshkosh, Wis.

Claims: A new addition to the line of U. S. air cooled electric plants is one rated 10,000 watts continuous output. The plant uses the 4-cylinder, 4-cycle Wisconsin VF4, V-block, 1,800-rpm engine.

Weighing 730 pounds, the engine generator is 43 inches long and 29 inches high. It is available with standard voltage, single and three-phase generators.

Standard equipment includes muffler, air cleaner, fuel pump, magneto ignition with radio shielding and two-rate battery charging circuit on electric start models.

A-C 200-hp. Motor Scraper

Manufacturer: Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.

Claims: Allis-Chalmers has introduced a new 200-hp motor scraper powered by a 6-cylinder A-C diesel engine.

The new TS-260 unit weighs approxi-

mately 39,600 pounds and has a 14-cu. yd. heaped capacity. The power of the diesel engine provides a good yardage to horsepower ratio. Also favorable is horsepower to gross weight ratio.

Other design and operating features add further to the TS-260's performance. A hydraulic pump, gear driven from the rear of the engine crankshaft, provides positive drive and assures constant live power for steering and scraper operation. The curved bottom and three piece cutting edge with offset center edge gives faster penetration and better loading with "live" action. Positive forward ejection plus high apron lift provide fast, clean spreading.

Selective hydraulic steering provides two-speed steering by action of a steering control valve that is actuated from the wheel by direct linkage. A 30° turn of the steering wheel right or left directs full hydraulic power to double acting steering jacks for fast, accurate full 90° steering. When a slower turning action is desired on fast hauls, a slight turn of the steering wheel permits a regulated pump flow which provides slow, smooth response. This results in unusual maneuverability. Synchronized four-wheel air brakes, plus an emergency brake system which goes into action in the event of air line failure, assure braking and complete control of the TS-260 by the operator at all times.

Among operational features of the new unit are conveniently positioned controls; "control tower" visibility from the foam rubber cushioned and upholstered bucket-type adjustable seat behind a shatterproof windshield; and the 24-volt electric starting system. For cold weather starting, an ether primer is provided.

Optional equipment and attachments available for the TS-260 include 26.50 x 25 wide-base tubeless tires as replacements for the 21.00 x 25 which are standard on the unit. To meet highway weight limits when the TS-260 is being transported over highways, quickly attachable auxiliary wheels that work on the caster principle and follow desired direction of travel automatically are available. These attach to the front bumper.

Goodyear Terra-Tire

Manufacturer: The Goodyear Tire & Rubber Co., Akron, Ohio.

Claims: Goodyear has announced the Terra-Tire, a barrel-shaped, low-pressure pneumatic tire that can be powered through its axle by any conventional drive system.

The Terra-Tire can take trucks, trailers and other off-the-road vehicles over all types of terrain and roadways. Speeds up to 65 mph have been achieved.

Through a hub and axle fitting, the tire receives its motive power directly from the engine. This tie-in with conventional drive systems means a considerable savings in weight, mechanical complications and cost.

Developed by Goodyear for use by the Transportation Corps, Terra-Tires can go where conventional tires "fear to tread" because of a low pressure inflation of between three and five pounds. The soft pneumatics tend to swallow up rough, uneven surfaces with little risk of puncture or blowout by conforming with uneven surfaces instead of resisting them. The tires act as built-in shock absorbers.

Heavy loads can be sustained because weight is spread over wide areas of the tires. Low ground bearing pressure and the extremely large footprint of the tires make it possible for vehicles to roll over cultivated areas, lawns, even putting greens, without rutting. Terra-Tire equipped vehicles can negotiate hills, dales, marshes and sandy areas without bogging down. Rock-strewn areas can be traversed as easily.

Available in a wide range of sizes, Terra-Tires can be put to a variety of commercial uses.

Electric Hammer

Manufacturer: Ingersoll-Rand, 11 Broadway, New York, N. Y.

Claims: A new lightweight, powerful electric hammer is now offered for maintenance and construction work by Ingersoll-Rand.

Weighing only 12 pounds 13 ounces, the H54U electric power hammer will drill holes in concrete up to 1⅛-in. in diameter. The tool delivers up to 1,900 blows per minute. Operations may be performed on a variety of materials including concrete, macadam, stone, cinder blocks, wood, metal, tile and earth.

The tool has several distinct advantages which, according to Ingersoll-Rand, makes it efficient, easy-to-use, and low in maintenance costs. Solid, hard-hitting blows are assured by an exclusive "spring-floated" piston, with the sealed spring accelerating the piston to produce a more powerful blow. This design prevents leakage and loss of power which sometimes occurs with an air-cushioned piston.

For quiet, smooth operation with less vibration and consequently less maintenance, the tool has hardened helical gears

Continued on page 64

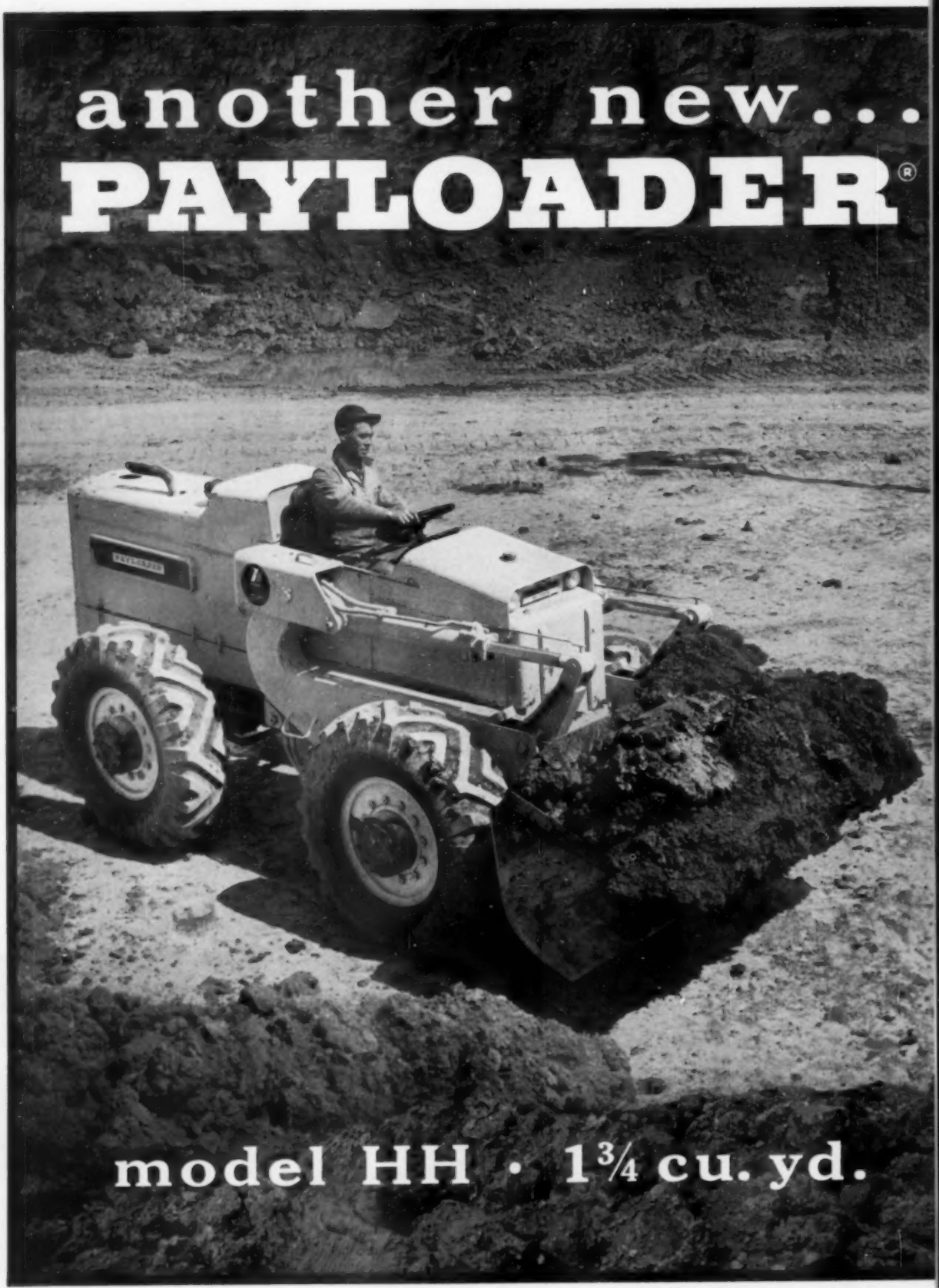
In a Hayward, there's no contact between the closing mechanism and the gravel or other materials handled. To be sure—this "no contact" feature is only one advantage. But a very important one to you—since it means much less wear, reduced upkeep, and a significant dollar-saving in bucket maintenance.

The Hayward Company, 50 Church St., New York 7, N.Y.

HAYWARD BUCKETS

CLAM SHELL • ELECTRIC • ORANGE PEEL • GRAPPLE

famous for performance since 1888


another new...
PAYLOADER®
model HH · 1¾ cu. yd.

more productive

This new, improved model HH is the finest tractor-shovel in its class ever offered. It has exclusive features that give it tremendous productive capacity for its size and enable it to *go* and *do* jobs where rubber-tire tractor-shovels couldn't operate before.

It handles easier and faster, and rides smoother, with or without a load, than any other make and can out-produce bigger machines. It has balanced design and durability throughout to do a big day's work day-after-day. Your "PAYLOADER" Distributor will be glad to demonstrate its superior performance and greater productive capacity.

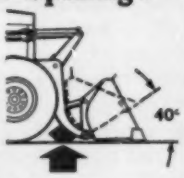
Long-life, high-traction drive train: Heavy duty planetary final drives in the wheel hubs, and hypoid differential gearing keep torque low in axles . . . prolong life of axles and *all* drive train parts.

Hydraulic shock absorber: A shock absorber in the hydraulic system smoothes out the ride, permits faster load-carrying speeds over rough terrain — with less spillage.

More production, less effort: Power steer, power brakes (on all four wheels), power shift (no "clutching") and good riding qualities also lessen operator fatigue—promote full production all day.

1956 Industrial Design Institute top award for styling this "PAYLOADER", was presented to Jon W. Hauser of Jon W. Hauser & Associates.

Bigger Loads . . . Less Spillage



Special pads on bottom of boom arms give ground support for powerful pry-out action — relieve the axles and wheels of these strains. Bucket can tip back 40 degrees, before raising, to get heaped loads quick and easy even in shallow cuts and low piles, and to retain heaped loads.

Faster, Easier Operation

The "Paylomatic" transmission in this unit is a complete power-shift type Hough-built expressly for "PAYLOADER" use. It gives instant finger-tip shifting — on the go. There's no stopping for a RANGE shift, no "clutching". The forward-reverse control can also be operated under full engine speed, in any gear . . . all this, plus torque converter drive.

More Reliable Traction

Four-wheel-drive traction is even more reliable on this unit, because it has torque-proportioning differentials — an exclusive "PAYLOADER" feature. The wheels with the best footing get the most power. You get traction and *action* on sand, mud, snow.

THE FRANK G. HOUGH CO.
708 Sunnyside Ave., Libertyville, Ill.
Send 4-wheel-drive "PAYLOADER" information on:

☐ model HO	☐ model HH	☐ model HU
2¼ cu. yd. Payload	1¾ cu. yd. Payload	1½ cu. yd. Payload
1¾ cu. yd. Struck	1½ cu. yd. Struck	¾ cu. yd. Struck

Name_____
Title_____
Company_____
Street_____
City_____
State_____

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

New Equipment . . .

Continued from page 61

and a counter-balanced crank assembly. Additional features are neoprene-mounted nozzle which protects the hammer when accidentally run without a tool, and the heavy-duty switch. The motor is cooled by a high velocity fan.

The tool is available in a standard kit, with a choice of three packaged accessory kits, or individual accessory items may be purchased as desired. The standard H54U kit includes the H54U hammer with 15 ft. cable and grounding adapter, together with a metal carrying case, tool retainer, dust shield, drill adapter (with handle and handle sleeve), drift and ⅞-in. diameter steel star drill. Other accessories are available.

International Loader, Scrapers

Manufacturer: International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

Claims: A new 1¾-yd. tractor shovel has been developed by International. The Model 12 Payloader is mounted on the TD-9 tractor which is equipped with extended track frames and 15-in. wide low profile grouser shoes.

Highlights of the new unit are: 91½-hp engine in rear; better power shift transmission and torque converter drive; power boosted steering controls; high break-out; 40° bucket tip-back at ground level; closed hydraulic system with pressure control; and three forward speeds and three reverse.

Power plant for the new International Model 12 Payloader is the International UD-350 diesel engine, which is rated at 91½ hp for this unit. With the engine mounted in the rear, it not only drives the unit but also serves as a counterweight, eliminating deadweight.

Much design consideration has been given in this unit to ease of operator control. Conveniently arranged immediately ahead of the operator, in an operator's "console," are a transmission range selection lever, directional shift control levers, left and right steering clutch levers, throttle, bucket control lever, and boom control levers. On the floor of the new Payloader the operator actuates the accelerator with his right foot. A top suspended service brake pedal is on the left side. This control also serves as a transmission disengage as needed. Tiptoe pressure applies the brake and heel pressure disengages transmission and also applies the brake. Controls, steering clutches, and steering brakes are power boosted.

Immediately behind the engine is the torque converter, housed in the accessory drive case. It is single stage, two-phase with a multiplication factor of 2.1 to 1. The transmission is a three-speed, full reversing, power shifted, constant mesh gear box. This transmission supplies three forward speeds ranging from 0 to 10.1 mph and three reverse speeds from 0 to 13.1 mph. Shifting can be made up or down, forward or reverse at any time at any throttle setting.

The hydraulic system of the Model 12 Payloader features a closed type, pressure controlled reservoir, which is located above the pump so gravity prevents formation of a vacuum. A hand hole has been provided for periodic cleaning and a convenient dip stick on the filler cap assures proper level maintenance. The boom is raised or lowered by two 7-in. diameter double-acting cylinders. The bucket is operated by two 4-in. diameter double-acting cylinders. All four piston rods are chrome-plated.

The Payloader has been designed to make service simple and easy. By removing two pins at the rear of the loader, releasing two jack screws at the front and applying up pressure to the boom. the body tilts up to expose the rear deck of the main frame. With the loader tilted in the up position and properly secured, the rear main frame is fully exposed. The bottom of the engine is also serviceable with the loader chassis in that position.

Design changes in the 262-hp, 20-yd. Model 75 Payscraper and the 172-hp, 14-yd. Model 55 Payscraper have stepped up capacity and efficiency of these self-propelled, rubber-tired units.

The back of the new Payscraper bowl has been shaped like a dozer blade enabling dirt to flow up and back and heap exceptionally well to top and sides, eliminating voids. A new, lowered draft frame and larger push-block direct push and pull power more effectively to reduce loading time. Another added feature is a new apron design, with apron arms outside the bowl away from the dirt, allowing the apron to close quickly and positively.

Operator safety and comfort have been improved through longer, wider fenders, excellent vision from the roomy operator's seat and centralized controls. Power steering is standard equipment for the Payscrapers.

Another important change on the Model 75 Payscraper is the introduction of the cerametallic clutch, made of ceramic material and fused, powdered metal. Made of the same combination of materials used in International crawler tractors and off-highway trucks, this clutch runs longer with fewer adjustments.

Big, safe, 4-wheel air brakes are synchronized on both tractor and scraper wheels. Conveniently located auxiliary hand brakes provide individual braking of drive wheels for walking out of soggy ground.

Designed for ground-hugging traction, the low-silhouette Payscraper has a top speed of 24 mph, ample ground clearance, and a low center of gravity for maximum stability over uneven terrain.

Drum Handling Clamp

Manufacturer: Yale Materials Handling Div., Yale & Towne Mfg. Co., Philadelphia, Pa.

Claims: Yale has announced a new rotating drum handling attachment of 2,000-lb. capacity which can serve a number of drum handling assignments and is particularly effective where quick horizontal placement or stacking is a materials handling requirement.

The new attachment rotates through a 90° arc to permit picking up drums in the vertical position and stacking them horizontally at a height dictated by the capacities of the truck on which

it is mounted. The new clamp can handle two drums in this manner.

Used to pick up, transport and stack drums vertically, the attachment can handle four drums at one time.

The attachment's ability lies in the design of the rubber coated clamp arms. One arm is articulating and shaped with two concavities which fit the shape of a drum. The other is flat surfaced and tapered slightly so that upon release of clamping pressure the drums will roll into position.

Clamping range of the 42-in. long arms is from 17⅜ inches to 71⅛ inches.

Vibrating Screen

Manufacturer: Hewitt-Robins, Inc., Stamford, Conn.

Claims: A new high speed vibrating screen 30 to 80% faster than previous mechanical screens has been developed by Hewitt-Robins for the fine screening of sand, clay, fertilizers, chemicals, coke, coal, asbestos and other materials.

The new HS Vibrex screen has a speed of 3,300 rpm when set for a $\frac{1}{32}$-in. stroke and 2,400 rpm when operating on a $\frac{1}{16}$-in. stroke. The maximum speed in the past has been 1,800 rpm. The new screen features a new lubricating technique in which atomized oil is injected under pressure into bearings in the form of a fine airborne mist. This oil mist system prevents the over-heating of bearings encountered at high speeds when conventional grease and lubricating oils are used.

The screen is especially designed for use with screen cloth of 10 to 80 openings per lineal inch. Under certain conditions it will be suitable for separations as high as 100 mesh. Wet or dry materials can be screened. The unit is designed for applications requiring electrically heated screen cloth to prevent blinding of cloth openings by damp materials. The machine handles most materials at an inclination from only 10 to 15°, as compared with 25 to 45° for most fine screens.

EVERY LOAD A PAY LOAD

Not conversation, but FACTS: the KIESLER clam shell, using the *proven* principles of leverage and power—applied to both shells—has more "DIGGING-IN" ability than any other bucket made. Results are deeper penetration-on-every-trip regardless of the material being moved, and greater payloads.

Mighty Ice Tong Principle

PROMPT SERVICE AVAILABLE

Factory service on Kiesler Buckets and as an accomodation on other makes, too. Whatever the problem, feel free to call on us.

GUARANTEE

Kiesler Buckets are guaranteed to outperform and do a bigger day's work than any other Bucket of equal weight, width and size, when properly reeved and operated.

JOSEPH F. KIESLER CO.

KIESLER

944 W. HURON ST. • CHICAGO 22, ILL. • MONROE 6-7144

Red-headed Tommy Meadours piloted this Cessna 180 pontoon plane, which *Excavating Engineer's* representatives rode to view the operations of the Monroe Wolfe firm.

Delta . . .

Continued from page 29

and bucket, the barge smoothly pivoted into working position in front of the Houston pipe laying spread. Soon, the 88-B's 4-yd. dragline bucket was sweeping clean the trench. The tugs prepared to pick up the barge with the 54-B and take it to a new location.

Barge No. 3 also had its welcome air of femininity in the person of Mrs. Nelson Roome, wife of its skipper. Mrs. Roome has been with Monroe Wolfe for four years. Her lemon pie, however, reflects much more than four years' experience. Mrs. Roome's immaculate kitchen had all of the conveniences of an urban home. Like Davis, Roome, a veteran of Delta excavation, was happy to have his wife aboard.

Cooking on barge No. 3 was done by Mrs. Nelson Roome, shown with her husband.

Figures for the 16 days ending March 31 revealed that Wolfe had excavated 64,631 feet of flotation canal and 10,079 feet of pipe ditch. The *C. F. Bean* was responsible for the excavation of 24,380 feet of flotation canal. The 71-B had dug 15,400 feet of flotation canal. The 88-B averaged between 12,000 and 13,000 yards of excavation per day, White said.

Two big crossings on Wolfe's job were the Atchafalaya River, 3,000 feet wide; and Wax Lake, 400 feet. This excavation work was performed by McWilliams Dredging Co., and Jahncke Service, Inc., as subcontractors.

The trench on the Wax Lake job, which required 18 days to complete, was excavated through stiff yellow clay to an elevation of minus 65. Normal bottom elevation on the Atchafalaya River is minus 50 feet. The pipeline went in at minus 75. The Atchafalaya crossing, which involved the excavation of soft sand, silt and clay, was completed in 20 days.

Wolfe's other 88-B, the tub-mounted excavator on barge 4, was nearly finished with an oil well location job which it had started about 10 days before in Mallard Bay. After it was finished there, White thought that it might be assigned to the pipeline job.

Contracts for oil well location work are awarded on quick notice by the oil and drilling companies, White said. These companies seek out locations by flying over the marshlands with airplanes and helicopters carrying seismographs.

When Wolfe obtains a location job, a clearing crew is sent to the site to slash timber with gasoline-powered saws and hand axes. As the clearing proceeds, Wolfe's barge and excavator is towed to a spot on the existing canal from where the flotation canal to the location will be dug.

The canals vary in length from 3,000 feet to three miles, White said. They have a normal width of 60 feet and are dug to minus 6 mean sea level. The location area is about 400 feet long and 200 feet wide and also is dug to minus 6.

After the location is prepared, drilling equipment mounted on a barge is floated in to begin the search for oil.

Sometimes oil is found; sometimes the well is dry, but the search continues.

Life can be interesting out in the middle of the "wilderness."

Here's a floating oil well derrick, an increasingly familiar site in Louisiana.

To help you boost output...

BUCYRUS-ERIE

All-New

DRAGLINE BUCKETS

BUCYRUS-ERIE'S all-new line of dragline buckets can help boost output, improve performance on your dragline operations. Fresh concepts in design and the use of a specially processed high strength alloy steel combine to bring you these outstanding advantages:

1. ***Fast, easy penetration*** of materials with "slicing-action" lip.
2. ***Full, rapid loading*** helped by tapered basket that is scientifically shaped.
3. ***Minimum bobbing and spillage*** because of proper flaring and balance.
4. ***Clean dumping*** assured by smooth interior design and high arch.
5. ***PLUS these advantages of Becoloy,*** special steel alloy: great strength and toughness; high impact and shock resistance, even at low temperatures; high elastic limit and endurance; easy-to-maintain qualities.

These new buckets are available in three types — light, medium and heavy-duty — with solid or perforated baskets. Your Bucyrus-Erie distributor is fully qualified to help you select the right size and type to boost output, improve performance on *your* job. See him soon or send for complete information.

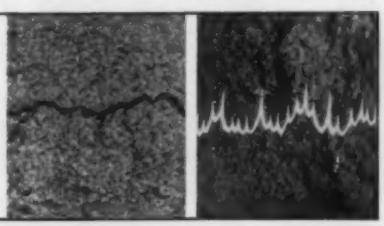
14R56C

BUCYRUS ERIE

SOUTH MILWAUKEE, WISCONSIN

BECOLOY... exclusive new alloy steel for Bucyrus-Erie dragline buckets.

The BECOLOY fracture surface at right shows the tough, fibrous structure that imparts high strength to this alloy. Ordinary steel fracture surface, at left, has a coarse, crystalline pattern.



BUCYRUS-ERIE COMPANY
South Milwaukee, Wisconsin

.....Please send copy of new dragline bucket bulletin.

.....Have a representative call.

Name_____

Company_____

Address_____

City_____ State_____

Limestone boulders to face the upstream portion of the embankment were trucked 50 miles from this site in the mountains.

Guarico Dam . . .

Continued from page 35

arrived by ship. As much as 13 or 14 tons of spare parts were flown weekly to the job by chartered airplanes.

Active on the Briviasca-Conticca-Groves contract were 14 Caterpillar No. 12 motor graders; 27 Euclid 18-yd. scrapers for clay production; 75 bottom-dump Euclids of 15 and 21-yd. capacity; five Euclid loaders; 27 Caterpillar D8 and four D6 tractors for fill processing; and 17 Allis-Chalmers HD-21 tractors.

Equipment List

The list of equipment also included excavators and cranes of several makes, among them two Bucyrus-Erie 54-B's with 100-ft. booms for concrete pouring. Some 50 pieces of automotive equipment included trucks, greasing units, fuel loaders, pick-ups and passenger cars.

Material for the concrete spillway was supplied by Tecnica Constructora, C.A. Spillway requirements included 130,000 cubic yards of structural excavation and 105,000 yards of concrete. Contractors placed about 1,600 yards of concrete per day. Two Noble batching plants, pouring into Mack mixer trucks, produced the concrete for this work.

Cement came from Pertigalete, 400 miles away, and was delivered into the battery of silos by 12 trucks of 20 tons. The trucks made three round trips a week.

New roads are a side product of the project. The 50-mile road over which rock was hauled to the dam will become part of the main highway which ultimately will lead to Caracas. This road will continue across the dam.

Workmen place boulders on the embankment. About 3,000 men were employed on the complete project at peak activity. Only 800 of them were assigned to the excavation.

Veterans . . .

Continued from page 43

low end and moving uphill, are as follows:

1. Since virtually all of the line is under existing street pavements, this pavement first must be scored and broken up to some extent. This work is done by an Ottawa Hydra-hammer which moves under its own power on rubber tires. The broken pavement then is loaded to GMC 620 trucks by a Lorain 416 crane with an Owen clam bucket.

2. A Bucyrus-Erie 22-B dragshovel, which the company has rented from the El Monte (Calif.) crane firm of Heisler & Woods, then moves in to take up an average of six feet of dirt over the old line. This is a ticklish operation because of numerous intersecting utilities. In practically 100% of the cases, however, it has been possible for owners of these utilities lines to locate them exactly with pipe detectors and to set stakes ahead of the 22-B machine. The 22-B's controls have done the rest, and there have been few if any cases of accidental breakage on utilities.

Remove Old Line

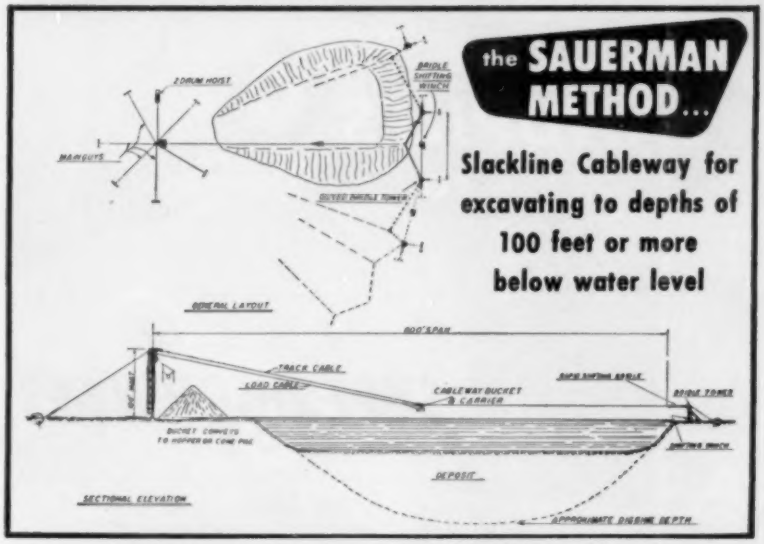
After the old line is uncovered, Gardner-Denver clay spades and a LeRoi 105-cfm compressor are used to dig an opening around the pipe joints. Welders, using Victor oxy-acetylene units, then cut the old pipe apart, after which it is picked up in sections by a Lorain truck crane and loaded out for salvage. The pipe is being delivered to the Water and Power Departments' main yard in Los Angeles. Dirt left from the excavation either is pushed back into the trench by a dozer or, if quantities make it desirable to do so, is hauled away by the company's General Motors dump trucks.

3. Next step is for the main ditch excavation to proceed. This work is being done by a Northwest Model 6 backdigger which has been rented from M. P. McCaffrey of Los Angeles. As this machine moves down the line, it balances the excavated dirt between what is needed for backfill and what should be wasted. Company dump trucks are hauling the material about six miles to a disposal area near Glendale.

Immediately following the excavation of the trench, pipe jacks and timber braces are placed. This has been neces-

Continued on page 70

HOW TO DO A BETTER UNDERWATER EXCAVATING JOB



Above drawing was prepared for a specific slackline installation and does not represent maximum spans. Rapid shifting bridle is not needed for many deposits.

Cableway at Cabinet Gorge Dam digs and hauls from tailrace 1000 ft. away. **(Full details in Sauerman News No. 143.)**

New York gravel producer switched to cableway for underwater operation of his pit. Average haul is 600 ft. from a 50-ft. depth **(Sauerman News No. 141).**

You can remove more underwater material with a long reaching Sauerman Slackline Cableway. On job after job this machine has proved to be the most efficient for this type of operation. It is especially effective where the material to be excavated has good depth and will flow to the bottom of the cut. For shallow deposits or non-caving material a rapid shifting device is used to change the line of operation.

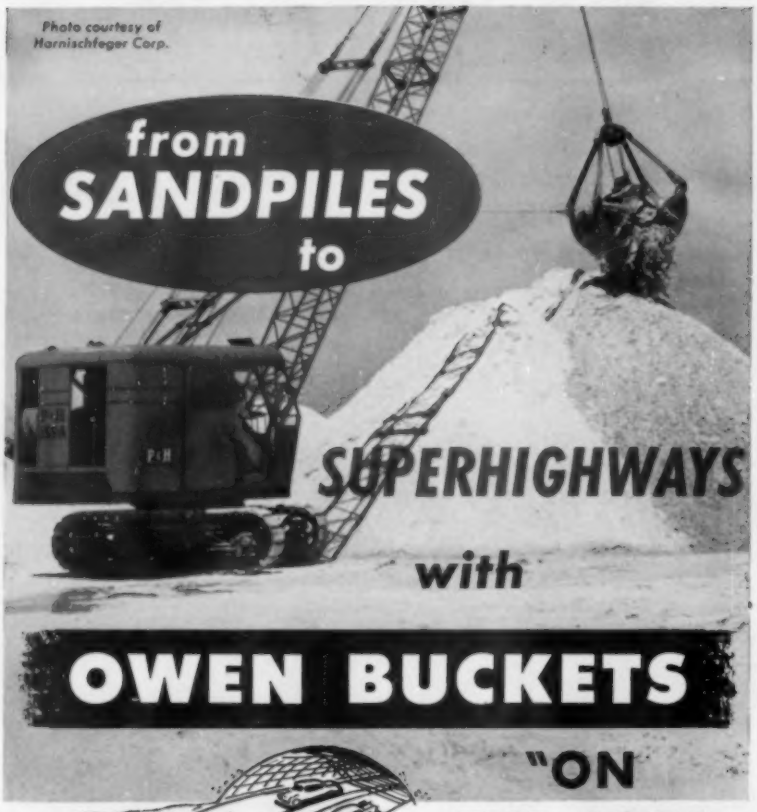
One man controlling the hoist digs, conveys and elevates from deposit to plant over spans of 1000 ft. or more . . . across streams, lakes, bogs or deep pits. The powerful load line pull insures digging penetration. Tensioning the track cable lifts the bucket which is inhauled at high speed and dumps automatically. Gravity return completes the fast operating cycle. Bucket capacities range from ⅓ to 3½ cu. yds.

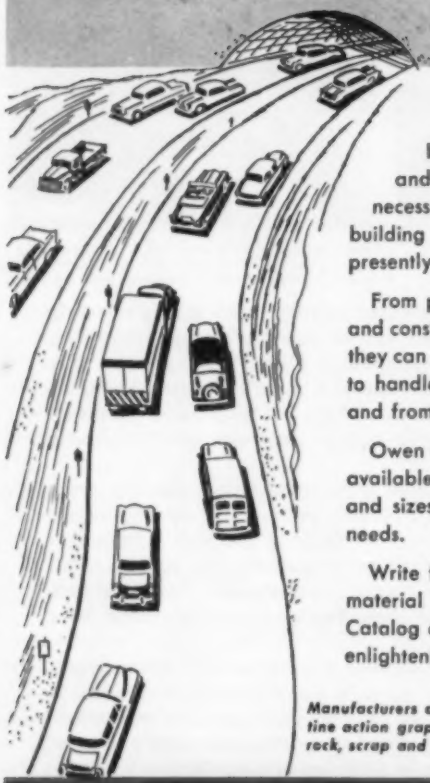
To get fast, economical long range excavation, and the shortest, most direct way from pit to pile use a slackline cableway. Contact Sauerman for specific recommendations. No obligation. Request Catalog C, showing detailed specifications and photos of slackline cableways in action on all types of deep digging jobs.

SAUERMAN BROS. INC.

622 S. 28th AVE. | BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks





It will take a "heap" of sand and gravel to make the concrete necessary for the tremendous road building programs forthcoming and presently under way.

From past experience, batch plants and construction jobs everywhere know they can rely on their OWEN BUCKETS to handle the loads from cars to pile and from piles to hoppers.

Owen material handling buckets are available in a wide range of types and sizes to best suit your particular needs.

Write for the general purpose and material handling OWEN BUCKET Catalog and get all the enlightening facts.

Manufacturers of the independent tine action grapples for handling rock, scrap and pulpwood.

THE OWEN BUCKET CO.

6095 Breakwater Avenue • Cleveland, Ohio

Branches: New York, Philadelphia, Chicago, Berkeley, Calif., Fort Lauderdale, Fla.

Veterans . . .

Continued from page 69

sary in virtually all of the ditch so far, because formations range from saturated hard clays to pockets of extremely hard rock. While no drilling and shooting has been necessary, and no difficult streaks equal to the Palos Verdes job encountered, digging nevertheless has been difficult in many cases. There also has been some tendency on the part of the saturated clays to cave in, thus making the uses of screw-type ditch braces necessary at least every five feet.

4. Following closely behind the Northwest trench-digging machine is a 35-ton P&H truck crane which also has been rented from Heisler & Woods. Its job is to lay 31-ft. joints of the 61-in. pipe, which were made for the job by the fabricating division of Kaiser Steel Corp., Fontana, Calif. The pipe consists of a heavy steel liner or shell, into which is spun a mortar lining and a cement outer coat. Each joint weighs approximately 11 tons. Although the crane has a capacity of 35 tons, there are many lifts which test its capacity because of overhead power lines which make it necessary to install the pipe sections with a low-angle boom.

When a joint is installed and lined up on the fine grade, five Lincoln welding machines power the necessary arc-welding units to join the steel shells together. Four passes generally are made at each joint, after which a heavy coating of asphalt paint is applied to protect these points.

5. This is the backfill step in which sand is dozed into the trench by Caterpillar D6 and D4 machines. The sand is hauled into the job by large trucks and semi-trailers from Arrow Rock Co.'s commercial plant nearby. After being dumped on the grade alongside the trench, it is strung out to cover the pipe at least to the spring line. In sections where the ditch tends to cave, A.B.C. has actually exceeded the intent of the specifications by getting the pipe covered with sand immediately to prevent the sides from slipping in.

It has been necessary on the Hollywood job, because of varying formations and considerations of safety for the neighborhood, to keep this whole sequence of operations tightened up within about 500 feet. But even so, the personal supervision exercised by Bostow and Parker on this spread has kept things orderly, well-managed and moving to good purpose.

New Trade Literature

Subject: **Willys Engines**

Content: A new 6-page brochure describing the 1956 line of "Jeep" four-cylinder industrial engines and power units has been issued by Willys Motors. Suggested applications for engines and units are included in the brochure. Complete tables of engine speeds in relation to torque and horsepower ratings in the 20 to 55-hp range are provided for the improved L-Head model L-4 and the F-Head model F-4. Described also are the special features incorporated in the Jeep industrial engines, including positive crankcase ventilation, claimed to remove dust and dirt particles as well as oil-thinning or acid-forming condensates; positive rotation of hard-faced, stellite valves; lightweight pistons of tin-coated aluminum alloy, with full hard-chrome plated top compression rings; rigidly constructed cylinder blocks; drop forged steel crankshafts, statically and dynamically balanced and counterweighted; and double honing of cylinder walls.

Where to get: Industrial Engine Dept., Willy Motors, Inc., Toledo, Ohio.

Subject: **G-E Electrodes**

Content: A four-page booklet gives features, deposition rates and properties of low-hydrogen, powdered-metal electrodes Strikeasy LH-1 and LH-2. Ask for bulletin GED 3048.

Where to get: General Electric Co., Schenectady 5, N. Y.

Subject: **Caterpillar Literature**

Content: Three illustrated folders discussing Caterpillar scrapers and dozers are available. *Questions and Answers About Sanitary Landfills* discusses disposal of garbage and waste. Nineteen specific questions are thoroughly answered in this 20-page brochure. Starting with the basic question of what is a sanitary landfill, the booklet goes on to compare the various landfill methods, how to approach each, and how much land is required for a successful operation. It points out that the U. S. Public Health Service, after extensive investigations on the use of sanitary landfill, highly recommends it as one of the most effective means of garbage and refuse disposal. The booklet offers an equipment selection guide for a starting point. The guide indicates approximate equipment necessary for towns up to 60,000 population. Ask for form DE620. *Stop Profit Leaks* considers four basic requirements of a crawler-drawn scraper: Is it able to get big loads, fast? Is it sure-footed on the haul road? Does it have quick positive ejection? Does it stay on the job with minimum repairs? It points out that if scrapers fail to meet one or more of these basic requirements, they are robbing its owner of potential profits. The 8-page brochure shows Caterpillar's complete line of crawler-drawn scrapers on actual jobs. It also considers the basic design common to all of the scrapers. Ask for form DE623. *Cat-Built Bulldozers . . . The Answer to Profitable Earthmoving* is the third booklet which points out that bulldozers are available for all track-type tractors in the Caterpillar line. Job shots of the dozers in action illustrate their ability when the going gets rough. Ask for form DE616. Copies of all three folders are also available in Spanish, Portuguese, or French.

Where to get: Caterpillar Tractor Co., Peoria, Ill.

Subject: **IH V-8 Trucks**

Content: *New Heavy-Duty V-8 Power Where You Need It Most* is a 16-page brochure which describes operating highlights of new engines used on International heavy-duty V-8 powered trucks. The booklet also explains the unusual testing, development and proving program that all models in the "V-Line" were put through. This covers work done at the modern IH motor truck laboratories and testing ground at Fort Wayne, Ind.; the "Desert Whipping Post" of the Phoenix (Ariz.) proving site; and finally the rigors of 2½ million miles of actual commercial operation that approximately 100 trucks went through in the hands of customers. A set of testimonial statements from various customers is also included with the booklet. Ask for form CR-637-F.

Where to get: Consumer Relations Dept., International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

"Program? You can't tell what they're doing without a program."

Subject: **Surveying Instruments**

Content: A 32-page bulletin describes the David White line of transits and levels and also their accessories. Design features and specifications are listed. Ask for bulletin 1056.

Where to get: David White Co., 315 W. Court St., Milwaukee 12, Wisconsin.

New Movies . . .

Subject: **Dalles Dam**

Content: A 28-minute sound-color film showing progressive construction of Dalles Dam is now available for screening by interested groups in the Pacific Northwest. Dalles Dam, 88 miles east of Portland, Ore., is the newest unit in the Corps of Engineers' comprehensive plan for development of the Columbia River. The film traces construction of the multi-purpose project from its inception until almost the present time. It was produced by the Portland District, Corps of Engineers.

Where to get: Film Library, Division Engineer, North Pacific Div., Corps of Engineers, 210 Custom House, Portland 5, Ore.

Subject: **Arc Welding Safety**

Content: A 20-minute, sound slide film, entitled *Always on The Job*, covers the basic principles of safety in electric arc welding. A companion film to Air Reduction's oxy-acetylene safety slide film, *The Guy Behind Your Back*, the new arc welding safety film also features a light cartoon approach to this serious topic. Sound record is 33⅓-rpm speed.

Where to get: Air Reduction Sales Co., 150 E. 42nd St., New York 17, N. Y.

Notes from the Manufacturers

Allis-Chalmers Mfg. Co., Tractor Group, Milwaukee, Wis., has appointed Clyde Crozier as European territory manager. He succeeds Myron W. Rhoten, who recently became managing director of Allis-Chalmers Great Britain Ltd., a wholly-owned Allis-Chalmers subsidiary in Essendine, England. Crozier joined Allis-Chalmers in 1941. John Fuestel has been appointed Africa and Middle East territory manager, a newly-created position. He joined Allis-Chalmers in 1944.

Buffalo-Springfield Roller Co., Springfield, Ohio, has appointed two new distributors for its complete line of road roller and compaction equipment. They are: West River Equipment Co., 417 Pine St., Rapid City, S. D., and Foster-Bell Co., which has a main office at 1001 E. 14th St., Sioux Falls, S. D., and a branch at 9 Jay St., North Aberdeen, S. D. West River Equipment will serve a territory embracing, with the exception of three counties, all of western South Dakota west of the Missouri River. Foster-Bell's territory includes all of South Dakota east of the Missouri River, plus three counties west of the river.

Carboloy Dept., General Electric Co., Detroit 32, Mich., henceforth will be known as the Metallurgical Products Dept., to reflect the company's greater emphasis on specialty metals development and manufacture. The two major products of the department are Carboloy cemented carbides and Alnico permanent magnets.

Caterpillar Tractor Co., Peoria, Ill., has appointed William E. McCoy as sales manager of its southwest division with headquarters in San Francisco, Calif. He succeeds the late Bernard L. Hagglund. McCoy has been with Caterpillar since 1939. Caterpillar has formed a new parts depot to be located in Hialeah, northwest of Miami, Fla. The depot will provide emergency parts service for south Florida and export dealers. A 50,000-sq. ft. building and outside storage slab will be constructed.

Clark Equipment Co., Benton Harbor, Mich., has appointed the Reagan Equipment Co., 4916 Jefferson Highway, New Orleans, La., to sell and service Michigan tractor shovels and excavator cranes. Reagan will serve the Louisiana parishes of St. Helena, Tangipahoa, Washington, St. Tammany, Livingston, Ascension, St. John the Baptist, St. James, St. Charles, Jefferson, Orleans, St. Bernard, Plaquemines, LaFourche, Assumption and Terrebonne.

"What's my income? First let me point out that I'm the contractor who's building your home."

Easton Car & Construction Co., Easton, Pa., has appointed George Sines as chief engineer. He formerly was assistant vice president of the Lakeshore Engineering Co.

Goodyear Tire & Rubber Co., Akron 16, Ohio, has announced the retirement of H. D. (Judge) Foster, sales manager of the Industrial Products Div. He had been with the company for 43 years.

Hercules-Powder Co., Wilmington 99, Del., has announced the election of Paul Mayfield as a vice president and member of the company's executive committee.

International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., has named Howard S. Manwaring as director of engineering. He had been assistant director of engineering since 1953.

Marion Power Shovel Co., Marion, Ohio, has promoted John J. Drollinger to the position as manager of repair sales. James P. Baker was named assistant manager. Drollinger succeeds William A. Dunning, who resigned.

H. K. Porter Co., Inc., 300 Park Ave., New York 22, N. Y., has named Lawrence L. Garber to the newly created position of vice president in charge of production for its 13 divisions. His offices will be in Pittsburgh, Pa. Eugene Salinger has been named general manager of Porter's Henry Disston Div., Pittsburgh, Pa., succeeding Garber. Porter's Leschen Wire Rope Div., 2727 Hamilton Ave., St. Louis 12, Mo., has appointed Charles L. Swinden and Willard J. Hannon as sales representatives. Swinden will cover the territory in California from Sacramento south to Tulare and from the East Bay area through most of Nevada. Hannon's territory includes western Illinois, the city of St. Louis and most of Missouri.

TO ADVERTISE: All advertising in this section is payable in advance. Rate: $1.00 per line, or $12.00 per inch of 12 lines. Minimum charge $4.00. No discounts; no commissions. Please count your copy carefully to avoid delay. Each line contains 41 characters (34 characters if all capital letters are used). Count spaces and punctuation as one character each. Allow 10 characters for box number, if blind advertisement is desired. Be sure to enclose the correct amount of money with your order. Closing date—15th of preceding month. Example: January closes December 15th.

TO INQUIRE: Be sure to address your inquiry to the advertiser by using the correct box number. Mail your letter in care of Excavating Engineer, South Milwaukee, Wisconsin. Write each advertiser a separate letter. Do not write us for name and address of advertiser. This information will not be given out. We have no information about the equipment advertised other than that shown in the advertisements themselves.

SHOVELS—DRAGLINES
DRILLS
CRANES—EUCLIDS

190-B Bucyrus-Erie Elec. 8 yd. Shovel
170-B Bucyrus-Erie Elec. 6½ yd. Shovel
1600 P&H Elec. 6 yd. Shovel
2400 Lima 6 yd. Diesel Shovel
120-B Bucyrus-Erie Elec. 5 yd. Shovel
1055 P&H 4½ yd. Shovel
111-M Marion 4 yd. Shovel
1201 Lima Standard 3½ yd. Shovel
111-M Marion 3 yd. High Lift Shovel
1201 Lima High Lift 2½ yd. Shovel
803 Lima 2½ yd. Shovel
80-D Northwest 2½ yd. Shovel
955 P&H 2½ yd. High Lift Shovel
54-B Bucyrus-Erie 2½ yd. Shovel
38-B Bucyrus-Erie 1½ yd. Shovel
6 Northwest 1½ yd. Shovel
25 Northwest ¾ yd. Shovel
22-B Bucyrus-Erie ¾ yd. Shovel
9-W Bucyrus-Monighan Elec. Drag, 170', 13 yd.
360-M Marion Drag, 150', 10 yd.
625 Page Diesel Drag, 150', 10 yd.
6160 Bucyrus-Monighan Elec. Drag, 160', 8 yd.
200-W Bucyrus-Monighan Drag, 140', 6 yd.
621 Page Diesel Drag, 135', 6 yd.
2400 Lima Drag, 120', 6 yd.
5-W Bucyrus-Monighan Drag, 120', 5 yd.
4500 Manitowoc Diesel Drag, 120', 5 yd.
4-W Bucyrus-Monighan Drag, 110', 4½ yd.
1201 Lima Dragline, 85', 3½ yd.
1055 P&H Diesel Drag, 100', 3 yd.
3500 Manitowoc Diesel Drag, 80', 2½ yd.
802 Lima Cranes
58-BH Joy Champion Rotary Air Drills
600 Reich Heavy Truck Mounted Rotary Air Drill
Failing Rotary Drill
Quarrymaster Drill—with 2-500 cu. ft. Compressors
Also, 42-T, 29-T and 27-T Well Drills

EUCLID TRUCKS—Many to choose from

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3858

LARGE SHOVELS, CRANES, DRAGLINES — 3 YDS. & UP

Model 2 T Monighan dragline shop number 369, 75' boom; has practically new Caterpillar D-17000 diesel engine, new circle rails and rollers, swing segment gear, swing pinion and shaft and center pin bushing. Box 3699

Lima 2400 dragline equipped with 110' boom, two 7-yard Hendrix HS buckets, one 6-yard ESCO bucket, Kohler light plant; machine powered with Caterpillar D-397 diesel engine; 63" wide treads; long caterpillar frames; machine shipped September 1950; completely overhauled June 1955; engine completely overhauled April 1955; Approximately $5000 in spare parts available; Price, as is where is, $115,000. Box 3677

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

Page 625 diesel dragline, S/N 242, new in 1951, has 150' boom and 9 yd. Page bucket; machine in A-1 condition; available now; located near Pittsburgh, Pa. Price $225,000. Box 3697

Bucyrus-Erie 200-W diesel dragline shipped in 1950; 125 ft. boom, 6 yd. heavy duty and 7 yd. light weight buckets; some spare parts included; good mechanical condition. Location Melbourne, Australia. Box 3682

Page 620 dragline, S/N 165, new in 1943; has 120' boom and 5 yd. bucket; machine in good working condition, but idle since November 1955; located near Pittsburgh, Pa. Price $50,000. Box 3698

J. P. WAITE, INC.
3304 West Pierce St. Milwaukee 15, Wis.

"YOUR USED EQUIPMENT HEADQUARTERS"

NEED ADDITIONAL EQUIPMENT??? . . .
NOT QUITE ENOUGH EXTRA WORK TO WARRANT NEW??? . . .
YET TOO MUCH WORK FOR COSTLY RENTAL??? . . .

Let us show you our complete line of used equipment—

CRANES—SHOVELS—DRAGLINES—BACKHOES

Rubber and crawler mounted

Call EVergreen 4-1900 or stop at Waite yard, 3304 West Pierce St., Milwaukee.

USED EXCAVATOR EQUIPMENT
TRADE-INS

¾-yd. SHOVEL—Model 22-B Bucyrus-Erie, completely overhauled. Cat D-318 diesel power, standard crawlers, ¾-yd. dipper—excellent condition.

1-yd. SHOVEL—Model LS-90 Link-Belt Speeder, Waukesha gas engine, used very little, 1-yd. dipper—like new condition.

¾-yd. CRANE—HEAVY DUTY Clamshell Combination, Model 40 General, Buda gas engine, excellent condition, recently completely rebuilt.

¾-yd. CRANE—HEAVY DUTY Clamshell Combination, Model 40 General, Buda gas engine, excellent condition, recently completely rebuilt.

2-yd. CRANE—Clamshell Combination, Model 820 Lorain, 90-ft. boom, fairlead, 2-yd. dragline bucket, Cat diesel power—excellent condition.

½-yd. DRAGSHOVEL, Model 15-B Bucyrus-Erie, New 1952, Cat D-315 diesel power, long frames, 20-in. crawlers, ½-yd. Hoe dipper—good condition.

½-yd. HOE-SHOVEL on rubber, Quickway Model "J," very good condition, priced right.

½-yd. UNIT CRANE, clamshell, 45-ft. boom, tagline reel, ½-yd. Owen clamshell bucket, good condition.

½-yd. UNIT CRANE, clam combination on rubber, self-propelled wagon type carrier, ½-yd. type "M" Owen clamshell bucket, completely overhauled.

H-2 HYDROCRANE—3-pump set-up, new valve banks; mounted on 1947 Chevrolet truck, repacked—good condition.

H-2 HYDROCRANE—3 pumps, late model, tagline reel; mounted on 1949 KB5 IHC truck.

H-3 HYDROCRANE—with magnet equipment; mounted on IHC 160 truck, very good condition—priced to sell.

¾-yd. DRAGSHOVEL, Model "L" Insley, D-315 Cat diesel power, independent boom hoist, 3 years old—good condition.

¾-yd. DRAGSHOVEL, Model "L" Insley, 425 Minneapolis Moline power, 30-in. crawlers, 3 years old—good condition.

½-yd. DRAGSHOVEL, Model 10-B Bucyrus-Erie, Buda gas engine, like-new crawlers, rebuilt dipper, good working condition.

OPTIONAL ATTACHMENTS OF YOUR CHOICE AVAILABLE ON ABOVE EQUIPMENT

GOOD BUYS PRICED RIGHT

"CHECK WITH US BEFORE YOU BUY"

All equipment offered subject to prior sale.

SMALL SHOVELS, CRANES, DRAGLINES — UP TO 2½ YDS.

1—Rex 27-E Paver
2—International-Harvester TD-18 tractors, less blade
2—DW-10 Caterpillar tractors with scrapers
2—Bucyrus-Erie model S-112, 10-14 yd. tractor drawn scrapers
1—Bucyrus-Erie model S-152, 16-21 yd. tractor drawn scraper
2—LeTourneau-Westinghouse Tournapulls with E-16 scrapers and rocker bodies
1—Lorain model 75-B, diesel powered 1 yd. backhoe
1—Michigan Model C-16, gasoline power, ½ yd. backhoe
1—Lorain model 77, diesel powered, 1¼ yd. shovel
1—American model 375-BC, diesel powered, ¾ yd. shovel
1—P&H model 855, diesel powered, 2 yd. dragline with 80′ boom
1—Northwest model 25, diesel powered, crane with 30′ boom

CALL OR WRITE FOR COMPLETE USED EQUIPMENT LIST

FURNIVAL MACHINERY COMPANY
Lancaster Ave. at 54th St. TRinity 7-5200
Philadelphia 31, Pa.

Type 460 Marion diesel electric shovel, S/N 5994, 1½ cu. yd., crawler mounted with Buda model 1139 diesel engine; this machine in Atlanta-Macon area. Box 3700

S-6075 (C) Bucyrus-Erie Model 10-B, ¾ yd. shovel on crawlers; powered by Buda gasoline engine; engine has just been overhauled; good running condition.
PRICE F.O.B. Middlesboro, Ky.....$4500
S-2917 (C) Insley Model K-12 dragline, ½ cu. yd. capacity with 45′ boom, fairleads and long and wide crawler tracks; powered by gasoline engine.
PRICE F.O.B. Evansville, Ind.....$7500
S-2983 (C) Unit Model 514, ½ yd. shovel on crawlers; powered by Chrysler gasoline engine; in running condition.
PRICE F.O.B. Paducah, Ky.....$3500

BRANDEIS MACHINERY & SUPPLY CO.
P. O. Box 1703 Melrose 7-4741
Louisville, Kentucky

Bucyrus-Erie 22-B, Caterpillar D318 engine; machine used only part time; absolutely perfect throughout; must see to appreciate; ¾ yd. rock bucket; excellent undercarriage; financing available. Call or write Midland Machinery Co., Chillicothe, Mo. Phone 280.

Bucyrus-Erie 15-B backhoe with Buda engine, f.o.b. Greensboro, N. C. $7500
Insley ½ yd. machine with shovel front, S/N K-3684, f.o.b. Greensboro, N. C. $4500
Northwest 25, ¾ yd. shovel with 24″ treads and G.M. 3-71 diesel engine; new 1949, f.o.b. Fletcher, N. C. $7500
Rex model 34-E dual drum paver with hydrocycle control, standard water storage tank, distributing boom, controlled door bucket, with 10′ clearance at end of boom and powered by General Motors diesel engine; this machine was new in 1952.
Allis-Chalmers TS-300 motor scraper with Buda diesel engine, f.o.b. Greensboro, N. C...$16,000

E. F. CRAVEN COMPANY
Greensboro, N. C.

MANITOWOC MODEL 3500 STRIPPING SHOVEL, S/N 3602; equipped with 45′ boom, 34′ sticks and 2 cubic yd. dipper; powered with Caterpillar D-17000 diesel engine new in 1951; machine is in good operating condition. Price $35,000 as is, where is, and can be inspected at Sunnyhill Coal mine near New Lexington, Ohio. Box 3692

If you are Buying or Selling Used Equipment, this is the place to let the Excavating Industry know about it.

MISCELLANEOUS EQUIPMENT

3—10″ McCulley gyratory crushers.
3—Traylor No. 412 type TZ gyratory crushers.
2—Traylor 8″ gyratory crushers.
1—New RCA metal detector 10″x36″ aperture.
6—Used single deck Robins gyrex screens with bases.
5—Used single deck Robins vibrex screens.
1—Used Cameron pump, size 10″, 2400 GPM, 125″ head, 1150 RPM, left hand, serial no. 57537.
1—Used Cameron pump, size 10″, 2400 GPM, 125″ head, 1150 RPM, right hand, serial no. 57535.
1—New Edison voice writer (dictaphone).
1—Marion model 490, serial no. 6201, Ward Leonard Control; also spare parts. In addition, we have a substation 2300/440 volt with three 150 KVA transformers.
1—20″ Traylor heavy duty finishing crusher.
4—Allis-Chalmers Gates "D" crushers, size 6.
1—Traylor rolls crusher—30″x72″.
*1—Fuller Kinyon system.
*1—Allis-Chalmers compeb mill.
1—Gill horizontal bit dresser.
1—1-ton Cummer black top plant.
*1—Covered steel barge, suitable for carrying cement.
*1—Covered wooden barge, suitable for carrying cement.
1—Thew Lorain 60 shovel.
1—Used Verifax Printer Type I
*Available after January 1, 1957.

Apply to:

NEW YORK TRAP ROCK CORPORATION
230 Park Avenue New York 17, New York
Phone: MUrray Hill 9-8500

R-4 Caterpillar tractor with angledozer; completely rebuilt, guaranteed condition.
Jaeger concrete mixer, model 14-El, 14 cu. ft. with skip; excellent condition; low price.

JOHN J. NORMOYLE CO.
607 Third Avenue Moline, Illinois

1—Ingersoll-Rand, gasoline engine operated, Quarrymaster drill, model QM-2 equipped with 500 cu. ft. compressors; UL-83 regulators; 40′ drill steel change; S/N 11697. Included are three 40′ drill rods, 3¼″ O.D.—¾″ wall, 2″ x 3″ A.P.I. threads for 6″ bits; excellent condition. Priced as is near Pottsville, Pa. $25,000. Box 3695

4—TD-24 International tractors with double drum winches, bulldozer blades, and cabs; 1954 models
3—Model 51-FDT twin engine Euclid scrapers with enclosed cabs and General Motors diesel engines
All of this equipment is in excellent condition and is reasonably priced.

M. DeMATTEO CONSTRUCTION COMPANY
200 Hancock Street PResident 3-8840
Quincy, Massachusetts

Ingersoll-Rand "Quarrymaster" No. 11629, Model QM-2; series KA-500 compressors; air-motor-driven hydraulic pump and valve unit for leveling; dust collection unit; utility air hoist; powered by Ingersoll-Rand diesel engines; 19″ treads; 45′ 11½″ high tower; 40′ steel 3¼″x2½″ drill rods; 2″x3″ joints API; 6″ bits—approximate net weight 65,000#. FAUZIO BROTHERS, NESQUEHONING, PA.

2—Model 27-T Bucyrus-Erie blast hole drills, crawler mounted, chain and sprocket drive, equipped with telescopic derrick and built-in tool wrenches; powered by Int'l. gasoline motors, water cooled, 4-cylinders with twin disc clutch; with the following accessory equipment for 6⅝″ drilling: combination and regular drill stems, wire rope sockets, drill bits and fishing tools; also one spare jack shaft completely installed, will fit either unit.
1—#8 Bucyrus-Erie bit dresser; complete without motor.
1—Coke furnace; with Champion electric blower.

All items are located at:

W. E. GRAHAM & SONS QUARRY
P. O. Box #4207 N. Sta.
Winston-Salem, N. C.

MISCELLANEOUS EQUIPMENT

FOR SALE—USED EQUIPMENT BARGAINS

80D Northwest shovel, S/N 13428-9392B, powered by model 21 Murphy diesel engine no. 14763, with supercharger, CONDITION EXCELLENT.
D8 Caterpillar tractor, power control unit with dozer.
No. 12 Caterpillar motor grader, S/N 7T 2814.
HD 19 tractors w/P.C.U. and push block.
7—Bottom-dump Euclids, 13 cu. yd. capacity.
3—End-dump Euclids, 9.2 cu. yd. capacity.
2½ cu. yd. Baer bucket, NEW.
2½ cu. yd. Esco dragline bucket, S/N 491.
500 cu. ft. Gardner-Denver compressor, S/N 134658.
3—Gardner-Denver wagon drills.
50-ton Fruehauf trailer, single drop.
30-ton Pointer-Willamette trailer, single drop.
2—3 cu. yd. Rex transit mixers.
Model 44C Barber-Greene trenching machine, S/N 44-20-97.
Model 310 Parsons trenching machine.
100 H.P. Steam Boiler.
27E Rex concrete paver.
Lakewood concrete finishing machine.
Ingersoll-Rand drill sharpener, tempering tank, electric motors, tempering furnace and Model 3 J.R. Rockwell Hardness Tester-Wilson.

KIELY CONSTRUCTION COMPANY
Drawer 246 Butte, Montana

OFFERED FOR LESS THAN HALF-PRICE

One Ruston-Bucyrus 42-RT Electric Blast Hole Drill.
One Bucyrus-Erie No. 12 Electric Bit Dresser.
This equipment is in excellent condition. The first machine has worked only 200 hours; the second is new.

Carrieres de Porphyre de Quenast
35, Rue du Faubourg, 35
QUENAST-BELGIUM

New 18″ dredging pump, rectangular cross section casing, high alloy steel liners, high alloy cast steel 4 van runner; spare liners. Box 3696

HELP WANTED

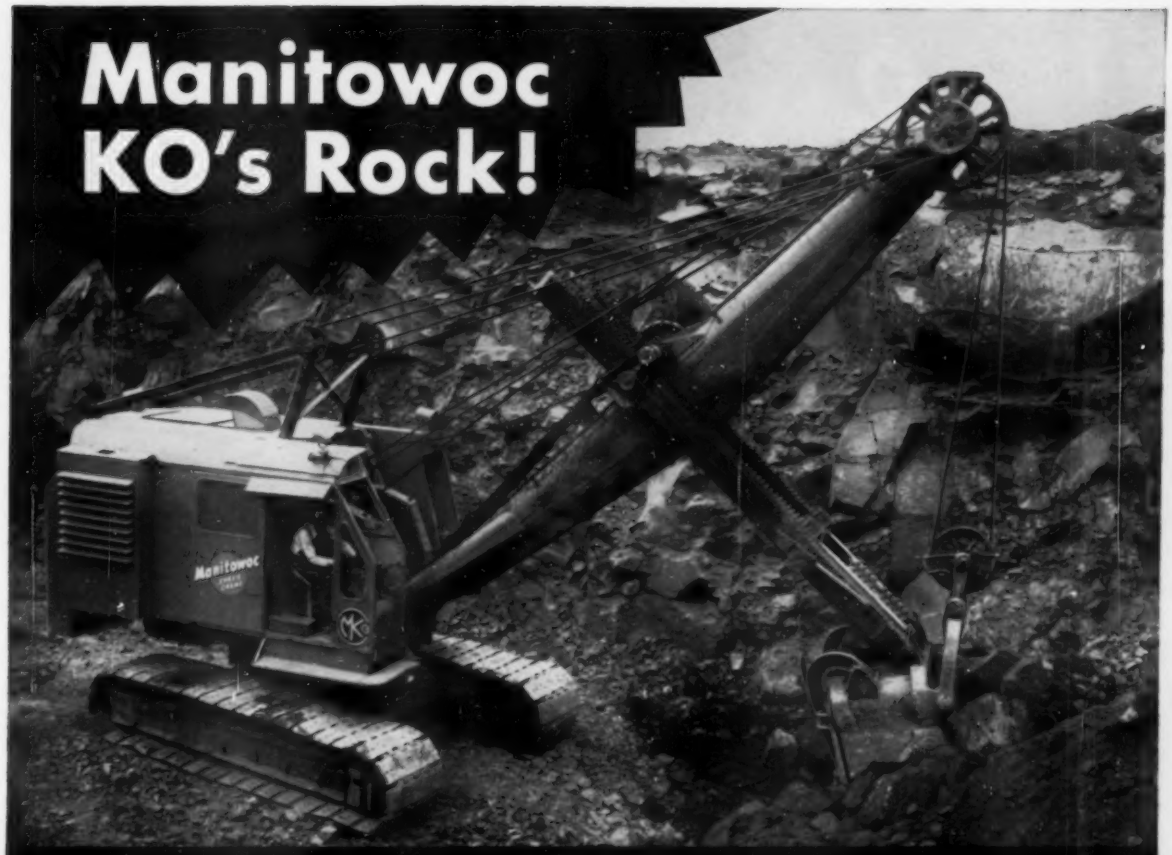
EXPERIENCED EXCAVATOR SERVICEMAN FOR CANADA

Prominent excavator manufacturer has position available for capable man, experienced in shovel and dragline operation and maintenance. A knowledge of mining, quarrying, and construction methods would be helpful. Trouble shooting and educating distributors' personnel with parts and service problems very important. Considerable traveling involved. Salary dependent upon experience. State full particulars. All replies confidential.
Box 3693

POSITIONS WANTED

Coal Strip-Mine Superintendent; 23 years experience as engineer and superintendent; supervisory experience on all types of shovel and dragline, from ¾ to 45 cu. yds.; will furnish references if requested. Write 123 Roosvelt Rd., Clarksburg, W. Va. or Phone Main 2-8614.

Manitowoc KO's Rock!



Tight digging space no obstacle to big capacity champ

Tough volcanic rock has met its master in the rugged 2½-yd. Manitowoc shovel used by Morrison-Knudsen, Inc. during one construction stage of Dalles Dam. The job involves relocating 14 miles of road bed for the Seattle-Portland-Spokane Railroad. Well over a million yards of volcanic rock have to be excavated before the project is finished, and this unit will be on the job till the end. Working in extremely narrow quarters, the Manitowoc 3500 is moving over 2,000 yards daily of the unusually hard-to-handle heavy rock. Torque converter power assures smooth, steady digging; positive steering is a must in the tight working space; an all-cast, manganese Esco dipper (optional) is specially rugged for tough rock work. Here's a rough job calling for a machine having the guts and power of a real rock shovel, with the mobility of a small excavator.

Extremely clean, simple design of the Manitowoc shovel produces more bite at the dipper because no power is wasted. Only 17 gears and pinions are in the entire machine, with only working gears turning to get full capacity from every unit of horsepower. Exclusive sliding pinion arrangement uses one set of clutches to drive travel, swing and boom hoist.

Shovel boom is high-strength alloy steel . . . built to take severe twisting and bending under tough digging conditions. Twin dipper sticks are of reinforced box section design . . . roll through saddle blocks on four adjustable rollers, achieving full utilization of power.

Simple, fool-proof air controls help eliminate operator fatigue. Smooth torque converter power makes for a more efficient operating cycle. There's no stalling of the motor, no over-loading . . . power is perfectly balanced to the load. You get the most efficient use of your machine with torque converter power . . . pioneered by Manitowoc in excavators.

Take advantage of Manitowoc's superior features. Your helpful Manitowoc distributor can fill you in on the complete story. Call or write him today for literature and specifications!

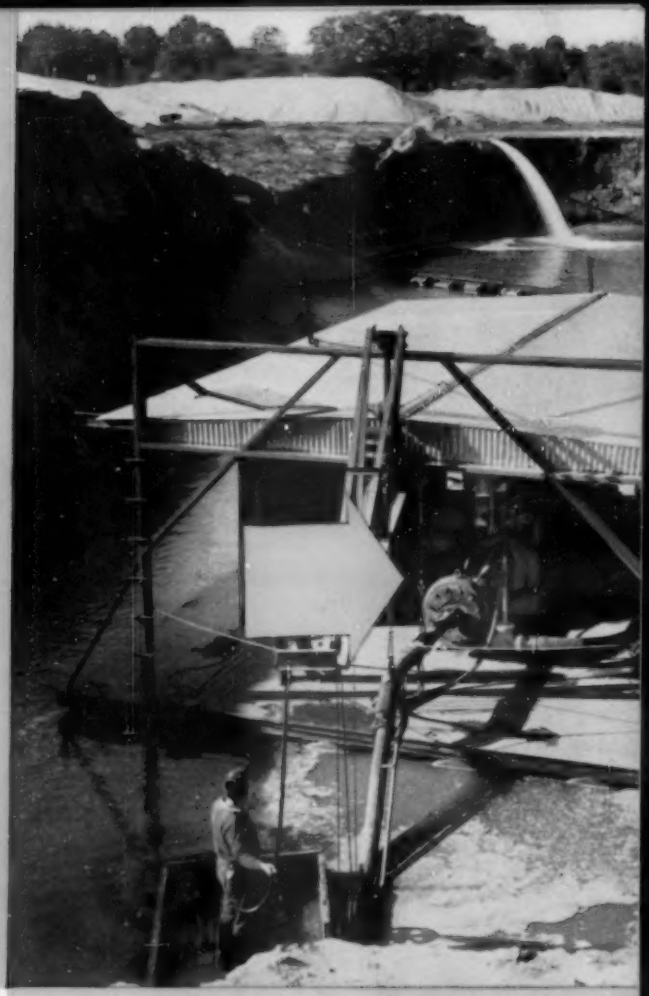
Manitowoc Engineering Corp., Manitowoc, Wis.

MANITOWOC

SHOVELS 1-5½ YD. Speed Crane CRANES 20-100 TON

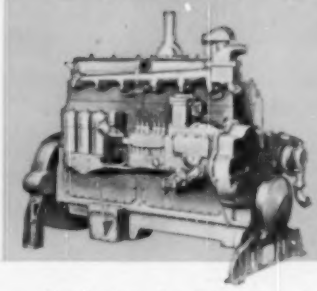
PROOF OF PERFORMANCE!

After 8 years' experience with a D13000, "nothing but another Caterpillar Engine" was considered by the Wenonah Sand & Gravel Co. for its second dredge



This CAT* D13000 Engine drives a 6" pump in a hydraulic sand dredge, operated by the Wenonah Sand & Gravel Co., Wenonah, N. J. There's a 70-foot lift through 600 feet of pipe to the wash tower. The engine, purchased several years ago, is the company's second D13000. According to Earl T. Kroll, Chief Mechanic, here's why: "Having used a duplicate of this engine in another dredge since 1946 with unquestioned economy and reliability, when we wanted to put another dredge into service, there was nothing but another Caterpillar Engine for us, a choice we haven't regretted."

This is just one of thousands of cases where the performance of one Caterpillar Diesel has sold another. There's a reason. These rugged units, available up to 650 HP (maximum), pay off in dollars and cents *on the job*. Simple to operate, they need a minimum of attention and maintenance. And they're sturdily built for a long life of low-cost use in *every* type of construction equipment. What's more, your Caterpillar Dealer stands back of them with prompt, capable service whenever and wherever it's needed!



NOW IN THE CAT POWER LINE-UP: THE NEW D342, AN EVEN MORE EFFICIENT UNIT!

Replacing the D13000, the more powerful, more compact 6-cylinder D342 delivers 210 HP (maximum). And with Caterpillar 4-cycle design, the fuel system requires no adjustment and there are no air boxes or cylinder ports to clean. Your maintenance is reduced to a few minutes a month for oil and filter changes. For complete information about this and other modern heavy-duty engines, see your Caterpillar Dealer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN HEAVY-DUTY DIESEL POWER